Playing with plug-ins? We tested a dozen [illegible] enhancements and identified six [illegible] just [illegible] have. Buyer's Guide, page [illegible]

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
April 7, 1997 • Vol. 31 • No. 14 • 124 pages • $3/Copy $48/Year

Wireless 'net access spreads

▸ Dial-up service said cheaper than T1 lines

By Mitch Wagner and Mindy Blodgett

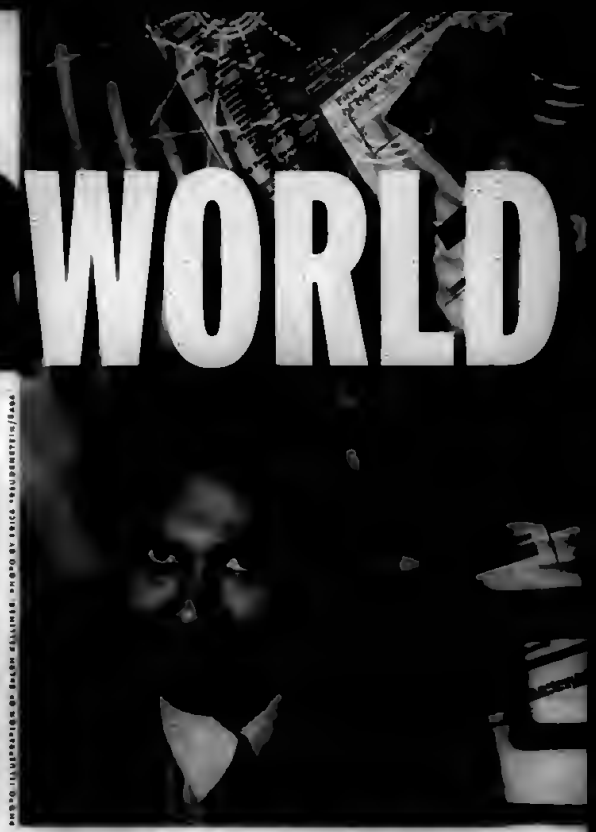
WIRELESS ACCESS to the Internet is becoming more widely available for mobile users and companies.

The current wave of services offers wireless access at dial-up speeds and will be followed later this year by high-speed services.

The technology was designed for notebook computers and handheld devices on the low end, and to connect entire buildings to the Internet or corporate intranets on the high end.

WarpDrive Networks, Inc. in San Jose, Calif., next week plans to announce beta-testing of a wireless Internet service slated for general availability in San Jose and Seattle by June and in

Wireless access, page 16



First Chicago Trust's Sajoo Samuel has found Internet outsourcing successful. But users and outsourcing experts say the practice poses potential hazards as well.

'net outsourcing a risky proposition

By Gary H. Anthes

YOU JUMPED ON the outsourcing bandwagon long ago, farming out data center management, telecommunications, disaster recovery, legacy systems maintenance and a few other things.

Now you're getting into the Internet game, so you might as well send that out the door as well, right?

Not so fast, some users and outsourcing experts say. There are things about the Internet that make outsourcing difficult and risky: The technology is changing at an explosive rate, the direction of emerging markets is unclear, and your company's strategy for electronic commerce may not be well-defined.

Outsourcing the 'net, page 74



Java's speed, cross-platform issues targeted

By Sharon Gaudin
SAN FRANCISCO

JAVA IS TOO SLOW. It isn't mature enough. And there are glitches in its much-touted cross-platform compatibility.

As much as Sun Microsystems, Inc.'s programming language has taken the computer industry by storm, those nagging worries have kept it from becoming a serious contender for mission-critical applications.

But Sun last week made it clear at its JavaOne conference here that it is making a major

Sun, page 113

Gotcha! Monitoring tools track Web surfing at work

By Sharon Machlis

NO YOU KNOW where your Web surfers are?

In a bid to control corporate network resources, systems administrators are turning to a new wave of products designed to monitor what users are doing on the Internet.

The programs can track which uniform resource locators users visit, the files they download and even the search terms they type in at sites such as Yahoo, Inc.'s namesake search site and Digital Equipment Corp.'s AltaVista.

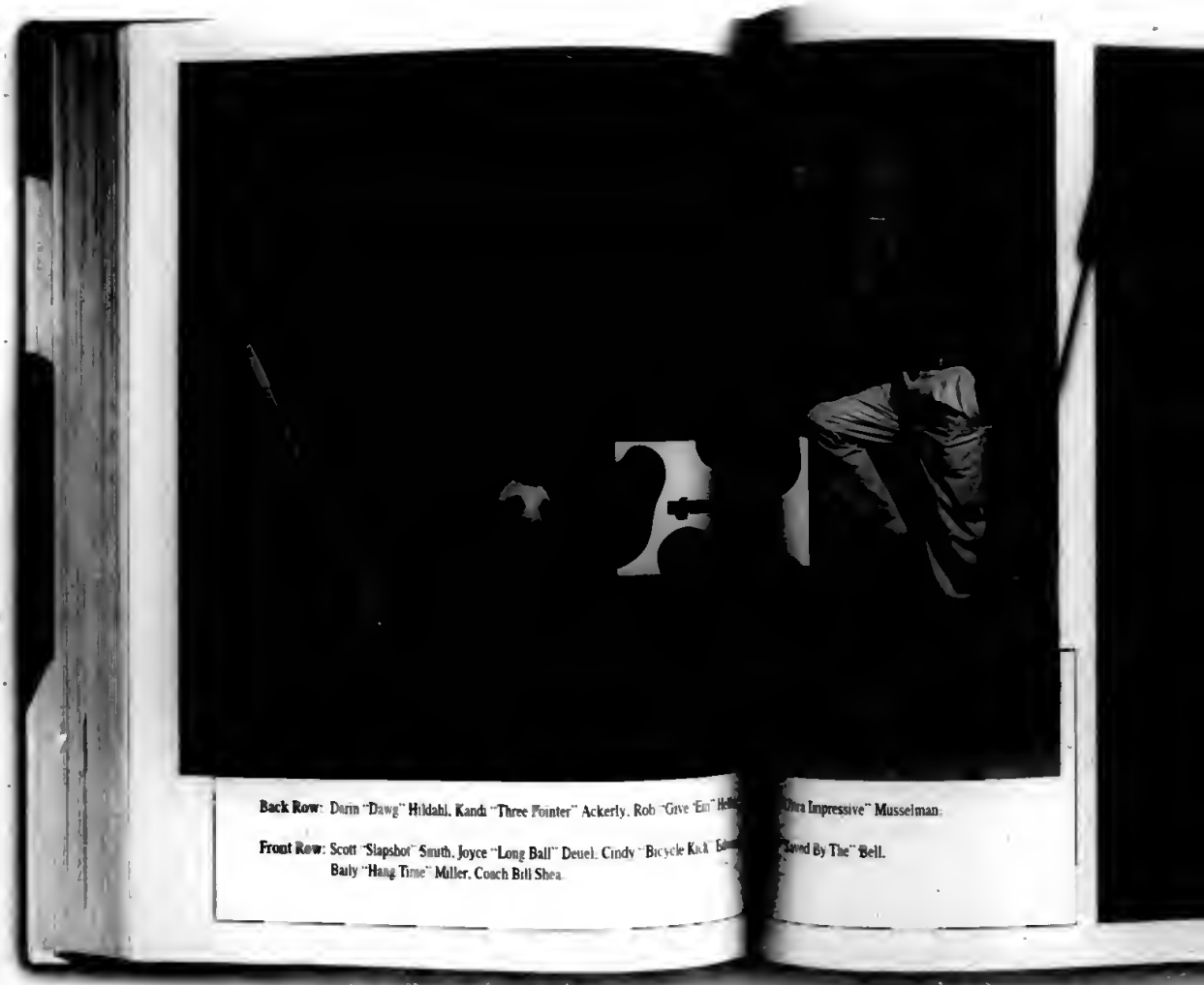
The monitoring is aimed at preventing workers from frittering away hours planning vaca-

Monitoring tools, page 16

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††Source: Dataquest, November 1996

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...ornish Edward Glaser's hospital network. The Enterprise Network, page 86

...managers insight into their managing style. Careers, page 90

...the standard, says Jerry Sullivan, Corporate Strategies, page 69

In this issue

NEWS

3 **Mixing host storage**
Archibald software to swap data among storage arrays from different vendors.

8 **Floundering upgrade**
Glitches in ... system upgrade leave health care firm owing millions.

12 **Gateway deposits**
AS/... group task force set to go to IBM ... warehousing needs.

14 **Active Web management**
Cabletron promises to use Java, CORBA to expand Web support in net management tools.

22 **Unexpected loss**
Informix users are confident despite whopping quarterly loss that dims the outlook for Universal Server.

OPINION

24 **Mistaken selection**
Laptop vendors are missing the boat on user needs and may get left behind, James Connolly predicts.

28 **Watch out!**
Guerrilla "intranetes" are popping up all over large organizations, and you will have to deal with them, Michael Schrage warns.

78 **Leading honest**
IS executives must remove potential conflicts of interest among staff members who make buying decisions, Lellani Allen writes.

TECHNICAL SECTIONS

42 **Smartening wins**
Mixing smart cards with network computers may make both more appealing.

43 **Win CE Outlook**
Microsoft will link its handheld operating system to Exchange, Excel and Outlook.

SOFTWARE

49 **Work quarter**
Sears Canada built a business analysis system to revive plummeting sales.

49 **Year 2000**
IBM aims a new package of tools at year 2000 problem on mainframes.

THE ENTERPRISE NETWORK

85 **Ally or enemy?**
GroupWise users have mixed feelings about Novell's alliance with Netscape.

86 **Migration assistance**
... software distribution tools at users moving to Windows NT clients.

...

83 ... Internet puts all its ... hands of consultants.

83 ... as gateway ... elsewhere.

83 ... adopt ... others.

89 ... how firms ... network.

89 ... group ...

FEATURES

77 ... managers' bookshelf, Web ... conferences.

91 ... Salaries ... users are on the rise, and ... so ... man.

ETC.

... 91
... 78
... 78
How to contact CW ... 11
Inside Lines ... 91
Stock Ticker ... 100

'Virtual tape' crams in data, cuts storage costs

By Tim Ouellette

DATA CENTER managers soon will be able to pack data more efficiently into tape systems, saving floor space and storage budgets in the process.

High-end tape storage competitors IBM and Storage Technology Corp. are developing "virtual tape" products, which are supposed to stop users from worrying about how much data is in each tape cartridge. Products won't appear until the summer.

Virtual tape technology completely fills each tape cartridge in a tape library. Currently, users might fill only a small portion of each tape because of volume constraints.

More efficient use of tape storage means users can reduce the number of new tape cartridges, drives and libraries they need to fulfill rising storage requirements.

"This is exactly what we need to save space on the library floor," said Russ Archibald, director of technical services at MCI Communications Corp. in Colorado Springs. MCI runs 86 StorageTek tape libraries across its many data centers.

Today's tape storage management is too manual-intensive, which makes it more expensive, Archibald said.

IBM and research firm International Data Corp. in Framingham, Mass., estimate that only about 10% of each data center's tape cartridge is filled with data. Mainframe applications and tape systems allocate data to tape in volumes. Although volumes can vary in size, they take up the complete location address of a tape cartridge, no matter how much space is used.

Disk arrays have shrunk while storing more data, but tape systems haven't kept up, even though more data — three times more, according to some industry estimates — is stored on tape than on disk, analysts said.

IBM's Virtual Tape Server (VTS), due to ship in June, will be the first product to address that issue. StorageTek's Virtual Storage Manager (VSM) won't be available until next year (see chart).

Both products will use disk arrays to cache mainframe data before moving it to tape. But the mainframe will see the disk array as a typical tape library.

IBM's VTS systems use a hardware controller that can reside on IBM's 3494 Magstar tape libraries and don't require any changes to mainframe software applications. Prices will range from $215,000 to $250,000, not including the additional tape drives and tape libraries that will be packaged with VTS.

With VTS, users can house the same amount of data in one of IBM's new high-capacity Magstar 3590 cartridges as they currently house in 50 3490 cartridges, IBM officials said. User savings could run as high as $280,000 for the cartridges alone.

StorageTek's VSM is made from proprietary technology that company officials claim will provide better performance than VTS, using more high-speed Escon channels and disk compression found in the Ramac Virtual Array. □

TALE OF THE TAPES

Features of upcoming virtual tape management products

Hardware controller	Host software to support VMS
RAID disk array	Ramac (formerly Iceberg) disk array
Magstar tape libraries, drives and cartridges	Near-line tape libraries and related drives and cartridges
Storage management software derived from IBM's ADSM backup package	

UP FRONT

Info-flap

Last week I had a harrowing introduction to the power of the Internet to spread misinformation.

It started on a Sunday, when a senior Oracle executive read a *Computerworld* article that was sent to him by an electronic news service. The article was a glowing endorsement of Oracle's Universal Server strategy.



Pleased with the positive publicity, the executive forwarded the article to other executives at Oracle. They, in turn, sent it to Oracle's marketing and salespeople around the world.

By midweek, hundreds, perhaps thousands of Oracle employees had seen the article. So had their customers. Calls were coming in to our editorial office from customers wanting to know if the story was true.

It wasn't.

At least, not the way it was presented. The article had appeared as part of a *Computerworld* Sound Off debate under the byline of Jerry Held, an Oracle senior vice president. It was balanced with an opposing opinion from an Informix official. Somewhere in the translation from print to electrons, the bylines were snipped, and Oracle's opinion looked like our opinion.

Oracle sent out a clarification, Informix got a letter from us, and I earned a few more gray hairs. But I also learned the hard way about the power of the Internet to deceive.

Nearly all our communications these days are digitized at some stage. Once information is digital, it can be copied, edited and distributed globally at the touch of a button. The Internet can be a wondrous publishing tool. But it can also be like the kids' game of telephone, in which a message is mangled as it's whispered from player to player.

Global E-mail is like publishing, but without the editors. And yes, there are reasons we have editors.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT



"HOLD ON, THAT'S NOT A PROGRAM ERROR. IT'S JUST A BOOGER ON THE SCREEN."

E-mail Rich Tennant at thefswave@tiac.net

NT 5.0 rates a thumbs-up

► *Early users like new features of Active Directory*

By Laura DiDio

ALPHA TESTERS are lauding the increased functionality in the forthcoming Windows NT 5.0 and its new Active Directory. This is despite the fact that they won't get their hands on the product until the middle of next year (see story at right).

Unlike the upgrade from NT 3.51 to NT 4.0, in which the main new feature was the Windows 95 user interface, Windows NT 5.0 will provide businesses with a slew of advanced functions. Those include the Active Directory, which will eliminate the limitations of the Domain directory and deliver a true enterprise database with centralized management; Java support; and caching capabilities.

EASE OF USE CITED

Among the dozen enterprise users polled by *Computerworld* was Ron Milione, chief of technology at Integrated Systems Group in Hauppauge, N.Y., who called NT 5.0's ease of use and setup straightforward.

"Windows NT 5.0 gives me the ability to define users by their roles in the organization," Milione said. For example, NT 5.0 contains a facility, called the Real World User Manager Utility, that lets administrators establish guest user accounts and assign that person to a specific group. "It means I no longer have to manually assign user access rights, which is a big time-saver," Milione said.

Jeff Dazell, LAN administrator for network services for corporate support at Dana Corp., a $7 billion automotive parts manufacturer in Toledo, Ohio, said he looks forward to the availability of the Active Directory and Lightweight Directory Access Protocol support. Both of these features will improve management capabilities and Internet access for his 45,000 end users.

Dana has 23 NT 3.51 and 4.0 domains, and the naming conventions are different for each one. "I have no way of knowing where a particular database or CPU resides. The Active Directory will solve that," Dazell said.

But the alpha testers also reported a major flaw in the prerelease software. The synchronization and replication feature that controls server operations doesn't work properly. Without complete synchronization, users on a Windows NT 5.0 network could be denied access to key resources and find themselves unable to communicate with other users.



Windows NT 5.0 upgrade will be "a big time-saver"

Milione and Dazell called this a red alert.

"There are definite glitches in [NT 5.0] synchronization during peak usage time and across the WAN links. We've experienced time-outs," Milione said.

Dazell said problems with replication and synchronization are "showstoppers" that could make network operations grind to a halt. But he said he would prefer that Microsoft hold up the release of Windows NT 5.0 for a year to get it right. "Better that than having to release five service packs to fix the bugs," he said.

Richard Palmer, a programmer at Texas Instruments, Inc. in Dallas, said he is resigned to the fact that he won't get NT 5.0 for more than a year. Meanwhile, the chip maker is constructing work-arounds that make the Domain directory easier to live with. □

Users: Delay is good news

Microsoft's decision to delay Windows NT 5.0 until the summer of 1998 comes as a welcome relief to 11 NT users contacted by *Computerworld* last week.

The users said the respite will provide the breathing space needed to complete installation of NT 4.0 and related hardware upgrades. It will also give Microsoft the time to get Windows NT 5.0 right the first time.

"If Windows NT 5.0 is stable, I want it. But I don't want an operating system that's broken or half-baked," said Kurt Cravens, network administrator at Northern Trust Co. in Chicago. "It gives me a real laugh that Microsoft is now just shipping a beta release of the Windows NT 4.0 Service Pack 3 software patch. What does that tell you?" he said.

Richard Palmer, a programmer at Texas Instruments, said the chip maker is riding the fence with respect to its NT 5.0 migration. "It will cost us $100 to $200 per workstation license for our 30,000 workstations worldwide. That's millions of dollars in upgrade costs and over a year to upgrade. When we look at it that way, we don't mind living with the domain directory and the older versions of Windows NT for another year," Palmer said.

Dan Scheffert, lead senior systems programmer at a Chicago paper manufacturing firm with 40,000 users worldwide, agreed. "I'll welcome Windows NT 5.0, but I won't be the first one to install it because Microsoft has a nasty habit of using its consumers as the test bed," he said. — Laura DiDio

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AMD challenges Intel with cheaper MMX chip

▸ *Court says Intel can't claim MMX term*

By April Jacobs

ANALYSTS SAY end users won't be able to tell the difference between AMD Corp.'s K6 MMX processor, which shipped last week, and archrival Intel Corp.'s Pentium Pro chip.

Except, that is, for the price. AMD said it plans to price its chips at least 25% below comparable Intel offerings (see chart).

AMD's K6 MMX is available in speeds of 233, 200 and 166 MHz. Intel in Santa Clara, Calif., hasn't yet announced a 233-MHz chip.

AMD's K6 MMX is compatible with Microsoft Corp.'s Windows 95, Windows NT and Windows 3.x; Novell, Inc.'s NetWare; IBM's OS/2 Warp; Unix; Sun Microsystems, Inc.'s Solaris; and Banyan Systems, Inc.'s Vines.

AMD didn't gain the K6 MMX designation without a fight.

A federal court last week denied Intel's request for a temporary restraining order to prevent AMD from using the term MMX with the K6.

"Intel thought they could ... subdue competitive threats from AMD and Cyrix. But now that the courts have allowed the use of MMX, it legitimizes a very good technological competitor," said John Dunkle, president of Workgroup Strategic Services in Portsmouth, N.H.

"The K6 is extremely well-designed, versatile and fast," Dunkle said. The K6 has the MMX designation and clock speeds that at least equal the Pentium Pro, Dunkle said, so PC users will hardly notice they have an AMD chip.

AMD in Sunnyvale, Calif., said major hardware vendors are evaluating the K6, including Digital Equipment Corp. in Maynard, Mass., Compaq Computer Corp. in Houston and Hewlett-Packard Co. in Palo Alto, Calif.

But AMD officials wouldn't say when or if machines would appear on the market with the K6 inside. □

ORDER IN BULK

AMD's K6 MMX processor is priced in quantities of 1,000 units

166 MHz	$244
200 MHz	$349
233 MHz	$469

Amdahl eases move of mainframe data

By Tim Ouellette

AMDAHL CORP. this week will begin shipping software that lets users migrate data among vendors' disk storage systems in their data center.

Called Transparent Data Migration (TDM), the package gives users a flexible way to move data among their various mainframe disk systems. Most big data centers have storage systems from multiple vendors.

"People continually tell me they want more than one vendor's storage devices in their data centers, since they don't want to bet all future functions on one company," said John McArthur, an analyst at International Data Corp. in Framingham, Mass.

Indeed, users at recent conferences have said that having a mix of storage systems in a data center helps their broker better deals and keep competition alive.

MORE OPTIONS

Data migration lets users move subsets of their databases to different machines.

For example, a data center may want to keep its marketing data on one system and financial information on a more secure system. Or it may move old data to slower disk arrays and keep the most current data on high-speed systems.

Most storage vendors, including Amdahl, EMC Corp. and Hitachi Data Systems Corp., offer data migration utilities targeted at their own storage devices.

Another advantage TDM provides over those tools is that the software does its migration work in the background and doesn't require taking a system off-line.

TDM pricing wasn't available. Officials at Amdahl in Sunnyvale, Calif., also confirmed they will try to sign OEM deals with other storage vendors to license the TDM technology. □

Object Design serves Java to users

By Craig Stedman

OBJECT DESIGN, INC. plans this week to release an updated version of its market-leading object database that lets users tap in to Java.

ObjectStore 5.0 adds support for storing native Java objects and for converting C++ server code into client-level Java.

Several prospective buyers said the Java capabilities should speed up their application development chores and make ObjectStore more user-friendly at the client end.

Java is a welcome relief from C++, said Dan Woods, a senior manager of applications development at Time, Inc.'s new-media unit in New York. "With Java, you're not hamstrung by all the ways you can shoot yourself in the foot that C++ presents," he said.

Time uses ObjectStore to run a personalized news service on its Pathfinder World Wide Web site. The new-media operation is writing an all-Java stock-quote application as a test bed for wider use of Java at the server, Woods said.

Burlington, Mass.-based Object Design has turned to the Web after failing to make much of a dent in traditional business applications, which still lean toward relational databases.

Woods and other ObjectStore users said object databases provide better performance and less painful development than relational software for applications that involve a complex mix of data.

Other new features of ObjectStore 5.0 include support for asynchronous data replication and automatic fail-over to a standby server.

Paul Rogers, a scientific application developer at the Monterey Bay Aquarium Research Institute in Moss Landing, Calif., said he looked at going relational for an upcoming intranet application that will store data about ocean creatures. But mapping the data in relational tables would have been "daunting," and the institute's scientists want to run hierarchical queries that relational databases "just struggle with," Rogers said. Instead, he is relying on Java objects and ObjectStore 5.0.

The new release is available now on Windows NT and Sun Microsystems, Inc.'s Solaris operating system. Pricing starts at $3,800. □

New tools at MQSeries expo

Users who plan to use messaging middleware will get a glimpse of new management tools this week at the first MQSeries Technical Conference in San Francisco.

Messaging middleware, such as IBM's MQSeries, lets multiple applications on different platforms share data through the use of secure, asynchronous data messages held in queues.

But there is still a need for configuration and management tools. Leading systems management vendors are addressing that need.

Candle Corp. in Santa Monica, Calif., will announce Version 2.0 of its Command Center MQSeries monitoring software and a new MQSeries configuration tool.

Boole & Babbage, Inc. in San Jose, Calif., will announce availability of AutoOperator for MQSeries, which centrally manages message queues, along with plans to provide a new Windows interface.

—Tim Ouellette

Gigabit Ethernet gets big backer

By Bob Wallace

3COM CORP. last week became the first big networking vendor to offer near-term Gigabit Ethernet products. But network managers said the emerging 1G bit/sec. networking scheme still has many limitations.

Gigabit Ethernet technology, due for release in the third quarter this year, was designed to let companies add capacity to backbone networks and provide faster access to server farms.

3Com's entry (see chart) is important because the fledgling market was full of small startups, most of which won't ship products for several months.

Although Gigabit Ethernet is far from robust, users said they can afford to wait for products to mature because their networks aren't heavily loaded.

"We're anxious for Gigabit Ethernet products to hit the street so we can evaluate them. But our backbone network is only about 15% loaded, so we don't plan to replace it with Gigabit Ethernet until early 1999," said Pete Bissonnette, a communications design analyst at Lockheed Martin Corp. in Pittsfield, Mass.

WHAT NEEDS TO BE DONE

Users and analysts said the following issues need to be addressed for Gigabit Ethernet to succeed:

- The process of link configuration, in which a Gigabit Ethernet product "shakes hands" with another device, hasn't been settled. A standard approach is needed, especially between devices made by different vendors.
- Flow control needs to be finalized. Without it, there isn't a foolproof scheme to assure data won't overflow device buffers and become lost. The same problem caused nightmares for users of early Asynchronous Transfer Mode (ATM) switches.
- Media support is limited. Gigabit Ethernet is specified only for multi- and single-mode fiber-optic cables. Twisted-pair copper support is expected later this year, at the earliest.

"I plan to begin testing Gigabit Ethernet products soon, but lack of support for copper is a big problem," said Ron Simms, a network engineer at Johns Hopkins University in Baltimore. "We have fiber at our server farms, but we have copper in most other places."

- Gigabit Ethernet uplinks — products that tie LAN switches to Gigabit Ethernet backbones — are few and far between. Without them, users face the expense of replacing switches.

"Vendors were very late to ship ATM uplinks, and that seriously delayed our ATM installation," said Niraj Patel, chief technology officer at GMAC Commercial Mortgage Corp. in Horsham, Pa. "Uplinks are critical to users who are planning a gradual migration."

On the plus side, users can initially expect to pay $2,000 to $4,000 per Gigabit Ethernet port. That means they can get roughly 10 times the bandwidth of 100M bit/sec. Fast Ethernet for twice the cost. □

3COM READIES GIGABIT FAMILY

Product	Available	Price
SuperStack II Switch 9000 SX (eight-port switch)	Q3	$19,995
SuperStack II Gigabit Ethernet Module SX (uplink)	Q3	$2,995
Gigabit EtherLink PCI NIC (adapter card)	Q3	not available
CoreBuilder 7800 Gigabit Ethernet Interface Card	Q4	$18,000
CoreBuilder 5000 Gigabit Ethernet Module	Q1, 1998	$5,000

Source: 3Com Corp., Santa Clara, Calif.

& Hospital moves to Gigabit to bolster LAN. Page 55

Groupware, messaging users go without the 'net

▸ *Proprietary links help in mixed environments*

By Barb Cole-Gomolski

SOMA USERS are rejecting Internet protocols and turning to a new crop of third-party tools to form tighter links between messaging and groupware servers from different vendors.

Those tools could help companies ease migrations, manage mixed environments and share information with partners.

Companies have been sharing electronic mail and directory information for some time via gateways and, more recently, Internet protocols such as Simple Mail Transport Protocol (SMTP) and Lightweight Directory Access Protocol (LDAP).

But the new offerings go beyond linking E-mail and directories to handle the exchange of databases and the contents of public folders, as well as the conversion of groupware applications from one platform to another.

"This is important because you have to be able to talk to any [messaging and groupware] platform today," said Mike Long, operations manager at *USA Today* in Atlanta.

But that isn't always possible using Internet standards because many groupware platforms are still proprietary at the core, Long said.

GROUPWARE DETENTE

The top messaging vendors are promoting interoperability via Internet standards, including:

- **Passing E-mail via SMTP**
- **Sharing discussion data via Network News Transport Protocol**
- **Accessing directories via LDAP**

The Mesa Group, Inc. in Newton, Mass., this month will ship Mesa Application Exchange, which will convert forms-based applications from Lotus Development Corp.'s Domino to Microsoft Corp.'s Exchange.

Separately, Casahl Technology, Inc. in Danville, Calif., recently added a version of its Replic-Action data replication tool for Exchange alongside its existing offering for Domino.

And Linkage Software, Inc. in Toronto will enhance its messaging connector for Domino and Exchange to support digital signatures, which are considered key to electronic transactions.

Users said those tools could ease migrations between products such as Domino and Exchange and make it easier to maintain those systems side by side.

Users also view groupware interoperability tools as key to helping them distribute applications to trading partners that use different groupware environments.

"We are a Notes shop, but we do collaborate with a firm that uses Exchange," said a systems engineer at a large Midwestern manufacturer. "We're not really interested in getting an Exchange server up and running to be able to share project information with them," said the engineer, who didn't want to be named.

The tools could also help companies that have mixed internal messaging environments. "A lot of the work to get these systems to interact is still done manually," said Bill Hankard, director of systems infrastructure at Tessera Enterprise Systems, a systems integrator in Wakefield, Mass.

Messaging giants Lotus in Cambridge, Mass.; Microsoft in Redmond, Wash.; and Novell, Inc. in Orem, Utah, have suggested that companies can achieve interoperability through Internet protocols, but some users are skeptical.

"I don't think the [Internet protocols] are a good enough answer, because of the security issues," said Al Mulnick, a consultant at Glaxo Wellcome, Inc. in Research Triangle Park, N.C. Glaxo is in the midst of a large Exchange deployment.

The groupware interoperability issue isn't likely to go away soon, analysts said. Although many companies strive for a unified messaging plan, large sites are likely to pick Domino for groupware applications and Exchange for E-mail.

Then there are companies such as General Motors Corp. in Detroit. The company has 100,000 Notes users, but its Saturn division uses Exchange.

Similarly, insurance giant Cigna Corp. in Philadelphia is expected to keep about 6,000 Notes seats up and running after its corporate migration to Exchange. □

3Com cuts Ethernet prices

By Bob Wallace

3COM CORP. last week slashed prices on its Ethernet and Fast Ethernet switches in a move to help firms more quickly and inexpensively deploy dedicated bandwidth to the desktop.

The Santa Clara, Calif., vendor dropped the price of its Desktop Switch, which provides 24 switched Ethernet ports, from $124 per port to $99 per port. The 12-port model now costs $192 per port, down from $279 per port.

"This is just the latest round in pricing 'one-downsmanship' from the major switching vendors," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif.

"Users can expect these moves to continue and should get excited because these are only list prices, off which most vendors and resellers discount aggressively," Howard said.

In a bid to keep pace in another key Ethernet market, 3Com slashed the price of its eight-port Switch 3000 Fast Ethernet system from $799 per port to $500 per port. The 12-port model now costs $583 per port, down from $749.

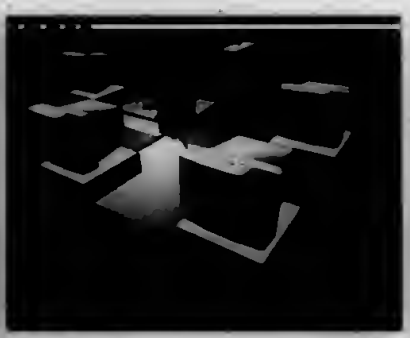
Ethernet switches can provide a dedicated 10M bit/sec. of capacity per user, while shared Ethernet hubs require multiple users to contend for one 10M bit/sec. stream. Fast Ethernet switches provide 10 times that bandwidth.

"We don't see price pressure, because we already have competitive pricing," said a spokeswoman for rival Cisco Systems, Inc. Bay Networks, Inc. declined comment. □

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Military beefing up its hacker defenses

▶ *Concerned about risks to national security*

By Sharon Machlis

NEWS ANALYSIS

WHY CAN'T the world's most powerful military keep Internet hackers out of its computer systems?

Experts say part of the answer is that no system connected to the Internet is 100% secure, even at the Pentagon. And hackers just love to pester big institutions such as the military.

But the U.S. Department of Defense shares some of the blame, according to congressional investigators. The U. S. General Accounting Office (GAO) has urged the military to beef up its firewalls, training and security staff, for example.

Recent reports highlight the dangers. The British Broadcasting Corp. last month reported that Dutch hackers who broke in to 34 military computer sites in 1990-91 offered to sell the information to Iraq during the Gulf War. But the Iraqis didn't buy it, probably suspecting a setup. Information about troop movements and weapons from unclassified networks was involved.



Also in March, 19-year-old Richard Pryce was fined 1,200 pounds (about $1,900) by a British court for hacking in to the computer system at the Griffiss (N.Y.) Air Force Base. Pryce had also hacked in to a network run by Lockheed Martin Corp. in California. The break-ins occurred three years ago.



"I think they have exactly the same incidents and exactly the same problems [in the private sector]. But they don't publicize them," said Rona Stillman, chief scientist for computers and telecommunications at the GAO.

The GAO last year investigated break-ins at military computer systems and concluded such attacks "pose serious risks to national security."

Along with beefing up technological defenses with encryption, firewalls and better user authentication, the GAO called for more emphasis on properly training computer security personnel.

POOR TRAINING

Many military installations lack full-time data security officers, the GAO noted, and a number of systems administrators surveyed said they hadn't received any formal network security training.

The GAO has just launched a program to help the government identify and learn from top private-industry, enterprise-wide security programs.

Defense contractors also can be targets of hackers in search of military data.

The TRW Space and Electronics Group in Redondo Beach, Calif., is upgrading its firewall. But "no software is absolutely perfect. It needs to be monitored," said Richard Mulligan, manager of computer security at TRW.

Mulligan said his group also is pushing lots of user education. That is a key component of any successful security program, according to experts. Employees are advised to encrypt sensitive information that they send outside the company. For other sensitive information, users are given system-generated passwords. They aren't allowed to pick their own passwords, because those code words may be easy for hackers to figure out.

EASIER NAVIGATION

Like most security specialists, Mulligan has seen hackers attempt to break in to his network. "Usually it's just people trying to suck up passwords and IDs. It's very difficult to navigate your way around a company's network to find specific information.... But in the age of Web browsers, we're making it easier," he said.

Former Department of Defense information security manager Robert Ayers said the private sector can learn from the military's move away from trying to build "intrusion-proof" systems to focus more on detecting and reacting to attacks.

"You just can't build a system, practically speaking, that is going to be unpenetrable," Ayers said. □

Fend off attacks

Sixty-two percent of the time that auditor Gordon Smith breaks in to a corporate network with an Oracle Corp. database, his team easily gains full control of that database.

The reason: Nobody bothered to change the default administrative password that ships with Oracle software.

That is just one of the many ways that companies inadvertently leave themselves open to easy outside attack, said Smith, president of Consudit, Inc., a security audit firm in Simi Valley, Calif.

Fortune 500 computer network defenses are usually "either very good or very bad," Smith said. "If we're going to get in, most of the time we get in in the first half-hour."

Despite all the publicity surrounding military security, Smith said he believes other parts of the national infrastructure, such as electric power and natural gas companies, are at even greater risk.

"If I was Saddam Hussein, I wouldn't take on the military. I would take on the infrastructure behind it," Smith said. "You wouldn't believe how easy it is to penetrate [some] companies." At one audit, his team found 309 users who hadn't set passwords.

Vendors can also cause security problems for their customers.

"In the past 18 months, we found eight vendor connections which enabled our clients to access competitors' servers [and vice versa] via the software vendor," he said.

Smith offered the following advice:

- **Require all accounts to have passwords at least 12 characters long, with at least one special (nonletter) character, to thwart automated password-cracking software.**
- **Turn on basic "three strikes and you're out" software features that kick off anyone trying to log on after three incorrect password entries.**
- **Find out about vendor "back doors" that may allow uncontrolled access to a network.**

— Sharon Machlis

To protect Unix servers, lock the back door

By Sharon Machlis

WORLD WIDE WEB sites are a favorite target for hackers who want to show off their skills, because mischief done there can play to such a large public audience.

One way to boost Web site security is to strip down the machine that hosts it, said William J. Orvis, a Computer Incident Advisory Capability team member at University of California Lawrence Livermore National Laboratory in Livermore, Calif.

In the case of a Unix box, Orvis offers the following tips:

- Remove Telnet, file transfer protocol and any other function that lets outsiders tap in to the system for purposes other than reading Web pages.
- Use the chroot command to isolate the server files and directories from the system files.
- Make sure the machine the Web server runs on doesn't have permission to do anything else and is not part of another group within the organization.
- Take away setuid capability of "everything you can," which prevents programs from automatically switching themselves into root. That allows only root users to change passwords.
- Don't allow the Web server to send electronic mail. A batch job can be set up to automatically send E-mail for the server at another site.
- If pages are being updated remotely, take away Telnet and use something such as ssh (secure shell) that uses encryption. If you must Telnet, use a one-time password scheme.

Similar things should be done with Web servers that run Windows NT or any other operating system, Orvis advised. "Eliminate all the software, and turn off all the services you don't need," he said. □

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HMO has payment ills

New York health care consumers in 1996 ranked Oxford Health Plans first in overall customer satisfaction . . .

. . . but only 34% of the nearly 3,000 consumers polled were "highly satisfied" with Oxford's point-of-service claim handling.

Source: CareData Reports, Inc., New York

By Thomas Hoffman

OXFORD HEALTH Plans, Inc., a $3 billion managed care company, owes millions of dollars in back payments to New York physicians and hospitals because of problems with the upgrade of its claims processing systems.



Oxford Health Plans is still fixing integration problems

The computer glitches have been a customer-service embarrassment for Oxford, which is considered a technology leader in the health care industry.

The Norwalk, Conn.-based company, which is still fixing integration problems between its Oracle Corp. software and Pyramid Technology Corp. hardware, has started to make amends for its overdue payments. Oxford's enrollment "has grown so rapidly that they probably have trouble keeping their records up-to-date," said Martin Schaum, a Garden City, N.Y., attorney who represents two New York physician groups that are still owed money by Oxford.

MULTISOURCE PROBLEM

Several technical problems contributed to the claims backlog, which occurred when Oxford began converting from its Pick-based claims processing system to an Oracle database last September.

The company converted 80% of its 1.5 million member and vendor accounts "cleanly," but 20% of the files "were more complex and challenging," said David Finkel, Oxford's vice president of operations. "Conversions of this magnitude never go as planned."

Finkel said Oxford also failed to simulate how the systems would perform with 3,000 concurrent users accessing multiple applications.

Taking into account the integration problems between the Oracle and Pyramid environments, the system lost 60% to 70% of its processing capacity, Finkel said.

One result was the average time it took for customer-service representatives to handle calls swelled from 4 to 8 minutes, Finkel said.

Oxford has taken steps during the past two months to fix the problems. The company has spread some of its enrollment processing to second and third shifts. And instead of running big batch processing jobs sequentially, Oxford runs the applications in parallel.

Oxford has significantly reduced its claims backlog and is processing 89% of its claims within 30 days, Finkel said.

Analysts said claims processing and poor customer service are problems throughout the health care industry.

"The worst-rated area for managed care is not the medical quality issues, but the customer-service issues that the majority of the population is dissatisfied with," said Tod Cooperman, president and CEO at CareData Reports, Inc., a New York-based market research firm.

In a 1996 CareData survey of nearly 3,000 health care consumers in New York, Oxford was ranked first in overall customer satisfaction.

But only 34% of Oxford's New York patients were "highly satisfied" with the company's point-of-service claims processing.

That 34% figure seems low, but it is still better than the 26% satisfaction rate consumers gave other claims processors in the same market. □

Microsoft denies NT password risk

By Laura DiDio

MICROSOFT CORP. executives last week issued a public denial that there are inherent security gaps in Windows NT that will let hackers easily guess protected passwords and crack the operating system.

Comments posted on some of Microsoft's online forums claimed that by masquerading as a network administrator with Administrator privileges, it is possible to go into the Windows NT Registry Editor database and download the encrypted password file. Then the hackers have to decode the encrypted passwords and try a dictionary attack to guess the password.

TOUGH TO DO

"This type of approach, while theoretically possible, is very far-fetched," said Mike Nash, Microsoft's director of Windows NT marketing. To be successful, a hack of the latest Windows NT password requires that the user has physical access to the server and Administrator privileges. Even so, a successful invasion hinges on whether or not the business still relies on easy-to-crack, all-text passwords.

The one known security flaw in Windows NT, 3.51 security, which allowed hackers to perpetrate a dictionary password attack without physical access to the server, will be closed via a fix in the release of Service Pack 3. The service pack is in beta testing now and is slated to ship this spring.

To help users identify potential security holes, Microsoft has established a security page on its World Wide Web site at www.microsoft.com/security. □

SHORTS

Saudi prince buys Apple stake

A Saudi Arabian prince who has invested heavily in Citicorp and the Disney theme park near Paris last week said he has acquired more than 5% of Apple Computer, Inc.'s shares for $115 million. Prince Alwaleed Bin Talal Bin Abdulaziz Al Saud said he bought the stock during the past several weeks because he believes "there is serious potential for Apple to provide large returns to its stockholders" as it has done in the past.

Keyfile upgrades workflow

Keyfile Corp. in Nashua, N.H., is shipping Keyflow 1.1, an upgrade of its workflow system for Microsoft Corp. Exchange that supports the Outlook 97 groupware client. Keyfile also is shipping a new version of its standalone Keyfile workflow and document-management system that runs on Windows NT and IBM OS/2 servers.

Apple ships Power Macs

Apple Computer, Inc. last week introduced a line of Power Macintosh computers that feature accelerated graphics and processors that run at 225 to 300 MHz. The Power Macintosh 6500 series will target the consumer, education and small-business markets. The machines have 32M to 64M bytes of RAM, a 3G- to 4G-byte hard drive, a CD-ROM drive, a 33.6K bit/sec. internal modem and 30 bundled software titles. The new models will cost from $1,999 to $2,999.

Kiwi releases notebook

Kiwi Computer, Inc. in Santa Clara, Calif., recently shipped a 166-MHz Pentium MMX notebook aimed at the midrange market. The notebooks will have 32M bytes of memory, a removable 2.1G-byte hard drive, an 11.3-in. active-matrix screen and space for two Type II PC Cards or one Type III PC Card. The notebook weighs 6 pounds and costs $3,999.

Oracle NC software due out

Network Computer, Inc. in Redwood Shores, Calif., plans to introduce a suite of server-based network computer software that will offer users productivity applications including word processing, electronic mail, spreadsheets and presentation graphics. NC Access software will be generally available in June, with limited quantities available today. Pricing for the client software, and the server-based suite, starts at about $5,000 for a concurrent license, with a minimum of eight users. Network Computer is a spin-off of Oracle Corp.

NetPC version debuts

Advanced PC Technologies Co. (APCT) this week plans to unveil its version of the Wintel network computer at WinHEC 97 in San Francisco. APCT's NPC97 incorporates a CD-ROM drive and a smart-card reader. It includes a Pentium CPU running between 133 and 200 MHz, and 32M or 64M bytes of RAM. APCT is working with VentureCom, Inc., in Cambridge, Mass., to develop a light version of Windows NT for NPC97 users.

SHORT TAKES: The Association for Women in Computing/NYC will hold its annual conference Saturday, April 26 at the Sony Building in New York. For information, call (212) 614-9565 or E-mail myntapik@ix.netcom.com. ... Supply-chain management software maker Manugistics, Inc. in Rockville, Md., reported its annual profits grew 81%, to $8 million on revenue of $94.7 million. ... AT&T Corp. and Zurich-based Unisource Carrier Services have agreed to combine integrated Services Digital Network service offerings to make ISDN easier to use for multinational customers.

Show attendees to get peek at next Win 95

▸ Microsoft also will unwrap device drivers, boot upgrades at WinHEC '97

By April Jacobs

ATTENDEES AT Microsoft Corp.'s Windows Hardware Engineering Conference (WinHEC '97) this week will be treated to a first look at Memphis, the new version of Windows 95.

Microsoft also will show off new unified Windows operating systems device drivers and On Now power management enhancements.

"I think they are going to need to talk about what they're doing with the Windows operating systems and how they are going to converge, or if they're going to converge at all," said John Dunkle, president of Workgroup Strategic Services in Portsmouth, N.H.

DRIVER'S SEAT

That convergence would at least include Microsoft's plans to offer users a unified interface between Memphis and Windows NT 5.0, a common device driver model and file structures.

Phil Holden, product manager for desktop operating systems at Microsoft, said the company will give users an enhanced Windows Driver Model that will let hardware and software developers write a single driver for Memphis and Windows NT 5.0. Holden said the Memphis software that Microsoft will deliver at the show will lack one core piece planned for the final version: an integrated interface with Microsoft's Internet Explorer 4.0 browser.

FOR THE HEC OF IT

Microsoft will detail the following topics at WinHEC '97 this week:

- **Common Windows operating systems device driver model**
- **On Now power management**
- **Zero Administration for Windows management tools**

Developers have been saying for months that a common driver model would greatly ease their workload, because many companies today are running a mixture of Windows 95 and NT.

Developers currently must write separate drivers for the two operating systems.

Holden said Microsoft also will announce seven new specifications for its On Now power management initiative, which will speed up and simplify the powering up of a machine.

Those specifications will cover audio, communications, display devices, PC cards, peripherals, networking and storage devices.

A desktop that is On Now-enabled would have features similar to those of a television set. A click of a button would turn on all functions without further user instructions.

The Redmond, Wash., company also will deliver a road map for its Zero Administration for Windows initiative, a set of Windows operating systems-based tools. The tools will be available in Windows NT 5.0, which ships in mid-1998; as a tool kit supplement for Windows NT 4.0 sometime during the next three months; and as part of Memphis, which will ship late this year or early next year.

The management tools were designed to lower the cost of managing PCs and serve as the foundation for managing Microsoft and Intel Corp.'s version of the network computer, the NetPC.

Microsoft also plans to outline its Simply Interactive PC initiative, which will enhance PC-based audio and video capabilities, such as interactive World Wide Web pages and videoconferencing. □

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Netscape tests tool to speed 'net app creation

By Justin Hibbard

NETSCAPE COMMUNICATIONS CORP. this week will release a beta version of its first visual development tool that could simplify the assembly of components into Internet and intranet applications.

Visual JavaScript, formerly code-named Palomar, lets users drag and drop prebuilt components from a palette onto a Hypertext Markup Language (HTML) page. The components include HTML form elements, JavaScript components and Java components written to the JavaBeans specification.

Other components provide access to services in Netscape's SuiteSpot servers, such as the ability to look up names in the Netscape Directory Server by using the Lightweight Directory Access Protocol. But unlike the Java, JavaScript and HTML components, the SuiteSpot components run only on SuiteSpot servers.

"Being able to get at all the SuiteSpot services easily instead of having to find them will help," said John Potter, head of the methods, architecture and data team at Deere & Co.'s Waterloo Works unit in Waterloo, Iowa. "We're extremely interested." He said the main benefit of Visual JavaScript will be its ability to develop prototype applications faster than before.

But many users and analysts said it is unclear what level of developer is supposed to use Visual JavaScript.

"On the one hand, you're trying to build a tool that makes [development] easier, but on the other hand, for someone who's not used to using the raw JavaScript code, they're going to find it very confusing," said an IS manager at a large retailer who requested anonymity.

> "Being able to get at all the SuiteSpot services easily will help.
> - John Potter
> Deere & Co

The problem, he said, is that end users without much programming experience are the primary creators of intranet pages at many companies. Although they often turn to corporate developers for interactive applications, end users are increasingly developing applications themselves, he said.

TOO TRICKY

For programming novices, certain features of Visual JavaScript, such as the long, fully qualified names used to identify components, may be too daunting.

But experienced programmers wouldn't have such problems. Stuart Patterson, a senior programmer at Harris Corp. in Palm Bay, Fla., said he could benefit from such a tool, especially if it speeds the delivery of applications.

Patterson said his main concern is that the tool not hide programming complexities and thereby prevent him from gaining easy access to source code. To that end, Visual JavaScript comes with a debugger for manually editing source code and an inspector that lets users customize components visually.

But the tool isn't intended solely for expert programmers or solely for end users, said Mike Gotta, an analyst at Meta Group, Inc. "I think it sits right in the middle," he said. "It's the person who is pulling all the content together."

Netscape officials said the tool was designed for combining components rather than creating them. For creating components, the vendor recommends SuiteTools, its bundled package from third-party vendors such as NetObjects, Inc., Symantec Corp. and NetDynamics, Inc.

A production release of Visual JavaScript will be available in the fourth quarter for $495. □

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AS/400 shops talk warehousing

By Tim Ouellette

OFFICIALS FROM the IBM user group Common this week will line up a user task force to bring their AS/400 data warehousing needs and concerns directly to IBM.

IBM USER GROUP

The group will meet with IBM officials, who have been positioning the AS/400 as a data warehousing vehicle, at this week's Common user group conference in Boston. The group's goal is to provide the vendor with customer feedback on packaging and promotional efforts and on various issues that surround the implementation of data warehouses.

Hammering home the growing interest in data warehousing is Common's World Wide Web site, www.common.org, which offers a list of members' top concerns this year. One concern is making sure users can rapidly create applications and projects such as data warehouses on the AS/400 without being left behind by the market (see chart).

One obstacle has been the slow movement of popular data warehousing tools to the AS/400. And even when such tools are available, users don't have easy access to them.

"IBM has some work to do with data warehousing tools," said Bob Tipton, director of technology at Whitman-Hart LP, a Chicago consultancy. "When users think of data warehousing on the AS/400, a lot of them aren't aware that many tools are already [there]," he said.

Van Symons, who leads IBM's data warehousing efforts for the AS/400, said IBM has tackled AS/400 performance issues with the new RISC-based machines but now must make sure users have access to the widest possible range of tools.

IBM will address that issue this week by announcing plans to resell MarginTracker, data warehousing software for the AS/400 targeted at wholesale distributors. The package was developed by Silvon Software, Inc. in Westmont, Ill., with prices starting at $50,000.

Also, IBM will continue to optimize the DB2/400 database for data warehousing uses.

Observers said the AS/400 can be a strong data warehousing machine. It offers 64-bit technology — which Unix servers are still trying to support fully — an integrated DB2/400 database and built-in security features. Users have long counted on the machine's reliability and scalability, which will be extended later this year with 12-way RISC processing machines.

"With the new 64-bit RISC boxes and multiprocessing machines coming out, the AS/400 is really turning into a strong data warehousing machine," said Paul McManus, director of application development at Apria Healthcare Group, Inc. in Costa Mesa, Calif.

JUST ONE

"If you are an AS/400 shop, it would be foolish to use any other box for your data warehouse," said Larry Overstreet, a systems engineer at Dayspring Greeting Cards in Siloam Springs, Ark. "You don't have to play system integrator [with various Unix or Windows NT products], and you can leverage all your existing skill sets and only have one [operating system] to manage."

IBM officials said 600 AS/400 customers tried data warehousing last year, with many large firms such as Nabisco, Inc. and Toys R Us, Inc. taking the plunge.

But observers wouldn't call the data warehousing interest a rush, especially with more than 400,000 AS/400s dispersed around the world. That is why the pressure is on for IBM to deliver proof at Common, where 5,000 AS/400 users will be looking for answers.

"AS/400 users say, 'Prove it, and then tell us about it,'" Tipton said. □

COMMON CONCERNS

Top concerns this year among AS/400 shops:

- IS must be able to develop new applications, which typically drive business decisions, rapidly and reliably
- IS must be able to quickly and economically maintain existing applications
- IS must be able to support business growth and generate revenue by exploiting emerging technology

Source: Common Online, Chicago, www.common.org

Palmer reshuffles DEC; consolidates units

By Jaikumar Vijayan

DIGITAL EQUIPMENT CORP. is giving it the old college try. Again.

In yet another effort to find a magic formula for reviving its sputtering turnaround, the Maynard, Mass.-based minicomputer maker last week said it is reorganizing its sales, manufacturing and service groups.

The latest revamp again recentralizes authority within Digital and reverses CEO Robert Palmer's decision three years ago to create discrete units with bottom-line authority and responsibility. Now, eight separate units are consolidated under three organizational units.

A spokesman said Digital is also looking at a "whole gamut of possibilities," including possible layoffs, to further reduce the cost of its operations.

The latest move elevates Bruce Claflin to what some observers said is the No. 2 position in the company. Claflin, who heads the PC business unit, will head up the new Worldwide Sales and Marketing unit.

Claflin was imported from IBM in 1995 and is credited with stemming the flow of red ink and stabilizing Digital's foundering PC business.

The latest moves come amid signs of a continuing sales slowdown that has led some observers to predict another lackluster quarter for the company and put increasing pressure on Palmer [CW, March 31].

"There are only so many reorganizations you can do before people start saying there is nothing going on here," said James Greene, an analyst at Summit Strategies, Inc. in Boston. □

ON TAP

Geac announcements at this week's user group conference:

SmartStream client/server division:

- Will integrate Geac's financial systems software into SmartStream package
- Will fund control application for the health care and public sector industries
- Will offer self-service Web-based human resources applications

EnterpriseServer mainframe division:

- Will add third-party imaging and workflow to Expert and Millennium lines
- Will add third-party electronic commerce to purchasing models
- Will add graphical user interface with Web and Java capabilities
- Will integrate Unix data warehousing tools

Geac to focus on financial, human resources apps

By Randy Weston

IN ITS FIRST user group conference since buying Dun & Bradstreet Software last year, Geac Computer Corp. this week will lay out its plans to focus on core financial and human resources applications and key vertical markets.

"The main message is that we now have our arms around what our business plan is, and we are making substantial investments in the products to deliver on it," said Steve Ely, Geac's vice president of marketing for the client/server division.

Markham, Ontario-based Geac bought D&B Software late last year for $150 million. Geac has reorganized into separate client/server and mainframe divisions, consolidated various Geac holdings and dropped a manufacturing module to concentrate on financial and human resource markets.

Ely said the new business plan calls for Geac to focus on key vertical markets of financial services, health care, business services and the public sector. Geac also wants to become the leading financial application vendor for Microsoft Corp.'s BackOffice, tweak products so they are database-independent and deliver self-service World Wide Web-enabled applications.

But some users will be looking for something that resembles the old D&B Software.

"I want to see continuity. I want them to ensure that the things we saw with Dun & Bradstreet are going to continue," said Mary Delaschmit, vice president of human resource information systems at Equifax, Inc. in Atlanta.

Delaschmit said her company wants Geac to maintain the business plan laid out by D&B Software and add functionality to the SmartStream and EnterpriseServer product lines while improving functionality.

Equifax, an international business information company best known for its credit-reporting division, uses Geac's SmartStream client/server human resource application package and its EnterpriseServer mainframe financial application.

The firm was also a beta site for Geac's CyberStream self-service human resources applications, which are now commercially available. Delaschmit said that relationship gave her early insight into Geac's vision.

CONTINUITY IS KEY

"Working with them on a day-to-day basis, they didn't seem to miss a beat," she said. "A lot of good people are still there and doing a good job. We are looking for as much of that continuity as we can get."

Users such as Delaschmit have been waiting for the past few months for the dust to settle at the former D&B Software's Atlanta headquarters. The former Dun & Bradstreet Corp. unit spent nearly a year on the block, and one purchase deal fell through at the last minute last summer. Geac finally stepped in with an offer late last year. □

Senior writer Tim Ouellette contributed to this story.



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Informix embraces open road

By Craig Stedman

FACING UP TO the fact that it can't force proprietary development tools on database users anymore, Informix Software, Inc. is throwing in the towel and going mainstream.

The Menlo Park, Calif., company last week announced a strategy overhaul aimed at reviving its sinking tools business. The new Universal Tools approach shifts Informix's focus from its own NewEra software to better-known products such as Microsoft Corp.'s Visual Basic, Powersoft's PowerBuilder and third-party Java tools.

NewEra will continue to be updated with new features, including support for the company's object-enabled Universal Server database. But Informix also introduced software that automatically generates SQL code and database links for users who write applications with other development tools. And it detailed plans to resell Symantec Corp.'s Java-based Visual Cafe Pro tool (see chart).

Several Informix users who passed on NewEra said the more open approach could make it easier to create applications with their favorite tools. Until now, developers with general-purpose tools have had to write the code needed to tap in to Informix's databases.

Gary Thomson, vice president of information systems technology at Choice Hotels International, Inc. in Phoenix, said his developers "needed to understand a hurdle of interfaces" before they could write Informix-based applications with Microsoft Visual C++ and PowerBuilder.

Choice Hotels, which operates 3,400 hotels worldwide, tested NewEra several years ago. "But it didn't come out high in our marks," Thomson said. "Our testers were pro-Informix people, and they said it was cumbersome to use. Nobody said they had to have it."

And finding developers who are familiar with NewEra isn't easy, said Jack Look, a data designer and architect at the American Medical Association in Chicago. "NewEra may be a great tool, but you'd have to go train everyone because no one knows how to use it," he said.

Informix's tool sales slumped 12% last year, and the decline is thought to have contributed to an expected first-quarter loss.

"The market has changed dramatically from three or four years ago, and developers want to use open tools now," said Brett Bachman, general manager of enterprise products at Informix. □

& Informix predicts a disastrous first quarter. Page 32

UNIVERSAL OPENNESS

Informix's Universal Tools strategy includes the following components:

Product	Features	Price/Availability
Data Director	Drag-and-drop tool creating database models and code	$90 to $495 per user; Q2 for Java and other Visual Basic tools
NewEra 3.1	Supports Web clients and Universal Server database	$4,495 per developer, plus $200 per user; available in Q3
Visual Cafe Pro	Symantec's Java developer tool will be bundled with Data Director	Not announced

Cabletron gulps Java

▸ *Future Spectrum tools to focus on Web access*

By Patrick Dryden

CABLETRON SYSTEMS, INC. last week outlined steps to improve access to its Spectrum network management tools via the World Wide Web.

The early supporter of the trend toward browser access to once-limited status and troubleshooting information will add three Web-based tools this year.

Next year, Cabletron will support the Common Object Request Broker Architecture (CORBA) and reusable services written in Java to speed delivery of new management applications for Spectrum users.

The sooner the better, said Jim Gogan, director of networks and communication at the University of North Carolina in Chapel Hill. "We've been pushing Cabletron for more help, because their Web support only goes so far," Gogan said. "The issue is timely response: More staff need the power to reach these tools from the browser that's on their PC so we can find and fix problems on 20,000 nodes in 140 buildings."

Spectrum lets users view reports and alarms from a browser instead of just from a Unix or Windows NT console. Cabletron, in Rochester, N.H., promises more interaction with Spectrum tools and information.

The company expects to ship by fall a Web-based version of SpectroRx, a tool that applies artificial intelligence to historical situations. Any browser with permission can reach the tool to diagnose and fix a problem.

"A lot of problems recur, so we want broad access to a troubleshooting tool that builds on the past, because our support staff is always turning over," Gogan said.

JAVA JUNCTION

A new Java-based tool will manage Asynchronous Transfer Mode switches. It begins beta testing this month.

Another Java application arriving late this year will manage Cabletron's SmartSwitch models independently or through Spectrum. It will serve as the model for Java-based tools due next year as Cabletron strives to add more flexibility for management software developers.

By enhancing Spectrum's interface with CORBA support and easy-to-reuse objects, Cabletron hopes to gain broader integration with other vendors' management tools.

And Cabletron can follow the lead of vendors such as Cisco Systems, Inc., which has been building Web-server capability in to its gear and testing Java management applets. □

BMC Software to expand Patrol scope

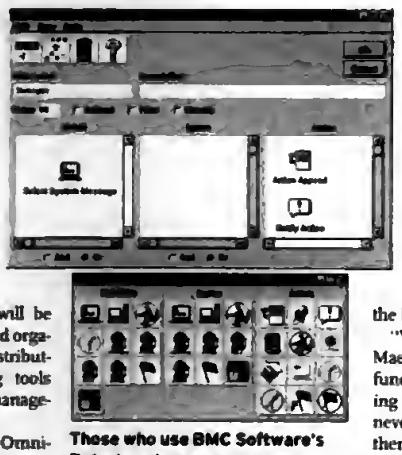
▸ *Integration with key scheduling, security tools yields alternative suite*

By Patrick Dryden

HOUSTON-BASED BMC Software, Inc. this week will announce two alliances that extend the reach of its popular Patrol system manager by integrating it with two more key management applications.

In addition to monitoring servers and databases, Patrol users will be able to control security and organize tasks throughout distributed networks by adding tools from leaders in these management specialties.

These include the OmniGuard set of security management tools from Axent Technologies, Inc. in Rockville, Md., and the Maestro job scheduler from Unison Software, Inc. in Santa Clara, Calif.



These who use BMC Software's Patrol system manager can define rules to manage systems and applications

Together, the vendors save users the effort of making these tools work with one another. The result is a basic integrated-management suite that can help managers quickly find and fix problems through the Patrol console.

"We thought Patrol and Maestro served different functions of troubleshooting and scheduling, so we never thought of linking them," said Dan Hughes, a systems engineer at T. Rowe Price Investment Services, Inc., an investment firm in Baltimore. "This is a pleasant surprise."

When a database job fails, operators tracking tasks through Maestro learn only that it ended, Hughes said. By linking event information from Patrol, they can learn, for example, that an overloaded processor caused the failure, he said.

"Now we can use our skills better to solve problems," Hughes said. Having both tools integrated will be especially helpful at night, when the skeleton crew has only one monitor to watch, he said.

GOOD OPTION

Analysts said BMC offers a best-of-breed alternative to the major integrated platforms. Those include Unicenter from Computer Associates International, Inc.; OpenView from Hewlett-Packard Co.; and the Tivoli Management Environment (TME 10) from IBM's Tivoli Systems, Inc.

Although "not on a par with the big suites," BMC's integration with Axent and Unison lets managers "solve a particular set of problems without going to a heavy-duty framework," said Paul Mason, director of the enterprise systems management program at International Data Corp. in Framingham, Mass.

BMC and its two latest partners don't offer the rich integration between functions found in the established suites, and each tool must be sold and supported separately, said Donna Scott, a research director at Gartner Group, Inc. in Stamford, Conn.

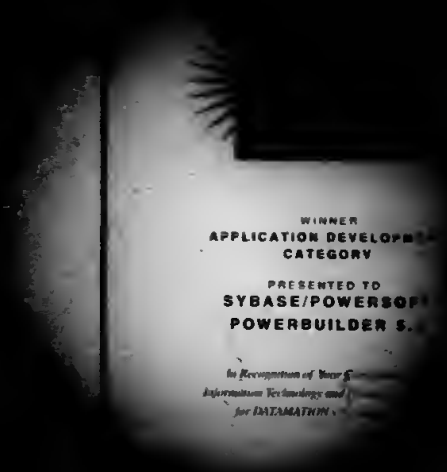
Axent expects to complete Patrol support for two of its OmniGuard products in June. The Intruder Alert and Enterprise Security Manager modules will each cost $5,000. They run on one or more OmniGuard servers in an enterprise.

Unison expects to ship a Maestro module for Patrol next month. That software, which costs $1,100 per system, must be loaded on every server. □

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BIG BROTHER

Software that monitors end users' Internet usage

Product	Company	Price
Net Access Manager	Sequel Technology Bellevue, Wash. www.sequeltech.com	$3,499 (100 users) $12,499 (500 users)
Purview Internet Manager	On Technology Cambridge, Mass. www.on.com	$10,500 (500 users) $14,000 (1,000 users)
SessionWall-3	AbirNet Grapevine, Texas www.abirnet.com	$4,950 (200 users) ($3,495 by May 15) $14,950 (unlimited) ($9,950 by May 15)
WinWhatWhere (monitors general usage, not Internet-specific)	WinWhatWhere Kennewick, Wash. www.winwhatwhere.com	$495 (10 users)

Monitoring tools track surfing

CONTINUED FROM COVER 1

tions, shopping for cars or checking the latest sports scores on company time, proponents said. Systems administrators can also use the data to stop the use of valuable network resources for nonbusiness-related activities.

"We have a written policy — what's acceptable and what isn't," said Debbie Curtin, an information security specialist at Madison Gas & Electric Co. in Madison, Wis. Like many companies that use these tools, the utility monitors network activity to ensure corporate policies are followed.

But critics argue that detailed monitoring shows a lack of trust and respect in the workplace and can cause a backlash among users.

POLICY-MAKERS

As World Wide Web use continues to explode, the popularity of corporate monitoring tools is likely to rise as well, said Chris Stevens, a research analyst at Aberdeen Group, Inc. in Boston. "There will be a growing need to implement Internet policies," he said.

Now that many information systems departments have acceded to user and management demands for widespread Internet connections, companies are discovering that "the amount of time that's spent on these things is extreme. It's really easy to waste time," Stevens said.

A typical telephone conversation averages around six minutes, but an Internet connection generally lasts 20 to 30 minutes. "The need to manage information resources and employees effectively requires intelligence," Stevens said.

Some IS executives said they don't target individuals but seek to understand overall network patterns.

At Black & Decker Corp. in Towson, Md., for example, monitoring showed that only 23% of the traffic going across the company's Internet connection was business-related. "That was kind of a shocker," said IS manager Stephen Swam. Management sent out general notices urging people to use the Internet for business purposes. "Employee productivity is probably the major issue" in monitoring traffic, he said.

Chris Wiley, a network administrator at a banking technology company, discovered that a company-approved afterhours Doom user group was sapping so much bandwidth that it was slowing down important evening network tasks. The company advised Doom players not to access the network until after 9 p.m. Without the analysis from the SessionWall-3 program from AbirNet, Inc. in Grapevine, Texas, Wiley said, he wouldn't have pinpointed the cause of the bottleneck.

GROUNDS FOR DISMISSAL

At some companies, managers who suspect an employee is wasting too much time on the Internet are seeking confirmation from Web monitoring logs. Bell Mobility Cellular in Toronto, which uses Purview Internet Manager from On Technology Corp. in Cambridge, Mass., fired one worker after issuing several warnings about spending too much time on the Internet, said LAN specialist Peter Williams.

Officials at Madison Gas & Electric check specific users only if a manager makes a request, Curtin said. IS sends results back to that manager, who discusses them with the employee. "Then it stops," she said. □

IS, leave our Web alone

Not surprisingly, some privacy advocates oppose monitoring employee Web usage.

"A good workplace, where there's trust of employees, shouldn't require that type of monitoring," said Marc Rotenberg, director of the Electronic Privacy Information Center in Washington.

But Lauren Weinstein, monitor of an Internet privacy forum (www.vortex.com/privacy), said companies can face lawsuits if employees download or send pornography and therefore must protect themselves.

Managers should develop a specific corporate policy on acceptable use of the Internet and publicize it, Weinstein advised, and they should be flexible about occasional recreational surfing.

"You need a large dose of common sense and a great big dose of information," he said. "The key question is: Are employees informed?"

— Sharon Machlis

Wireless 'net access services emerging

CONTINUED FROM COVER 1

Los Angeles, San Diego and Portland, Ore., by year's end. It will send data at speeds between 28.8K and 256K bit/sec. It will receive data at speeds between 256K and 10M bit/sec.

Metrocom, Inc. in Los Gatos, Calif., plans to expand its wireless Internet service from three cities to 16. And World Wireless Communications, Inc. in Salt Lake City is beta-testing its wireless Internet connection through Utah Internet Services, also in Salt Lake City.

NEED FOR SPEED

Wireless Internet access products will attract users looking for high-speed access at relatively low cost, said William Frezza, an analyst at Wireless Computing Associates, Inc. in Yardley, Pa.

"When priced against T1 lines, these products will look pretty attractive," he said. For instance, World Wireless expects to charge between $600 and $1,000 per month for 1M bit/sec. service and $2,500 to $5,000 per month for transmission speeds of 4M bit/sec. By comparison, a T1 line that moves data at 1.5M bit/sec. costs about $2,000 per month.



Hedy Lamarr

Filed wireless patent

Proponents also argue that the wireless services will offer significant advantages over hard-wired connections. Low-end services, such as the Ricochet wireless modem connection from Metrocom, tout mobility as a plus.

"In a hot-shot corporate environment, you can walk around the whole building with a laptop in your hand and a wireless connection on your belt," said David Hughes, a managing partner at Old Colorado City Communications Co. in Colorado.

The company is conducting wireless Internet access trials for schools on behalf of the National Science Foundation.

For high-end services, users won't need to tear apart walls and dig up the pavement to install wiring to connect systems.

Chris Pizey, a webmaster at Universal Press Syndicate in Kansas City, Mo., said he is reluctant to try wireless Internet access.

"A lot of the people I've talked to that have tried these cellular modems haven't been particularly happy with them. They say they've been disconnected a lot," he said. "I have enough problems with Internet access right now with running our Web sites. The thought of being connected via wireless isn't all that interesting to me."

Most early deployments so far have been in schools, isolated rural areas and developing countries. But business access is expected to roll out this year. □

No wire act

Wireless Internet access uses radio transmitters and receivers to exchange TCP/IP signals, replacing hard-wired connections.

Wireless modems are used on notebook computers and handheld devices, moving data up to 28.8K bit/sec. Recent services were designed for larger systems at faster throughput — 1M bit/sec. and faster.

Technologies to enable these systems include cellular modems, short-range radio broadcasts and a transmission technique called "spread spectrum." One of the pioneering patents for spread spectrum was filed by movie star Hedy Lamarr.

The benefits include the following:

Lower costs: High-speed systems are touted as being a fraction of the cost of T1 lines, moving data at similar rates or faster.

Mobility: For cellular modems, and limited mobility for high-speed systems as well.

Ease and flexibility of installation: No need to knock out walls or dig up ground to lay wire.

— Mitch Wagner

AOL cagey about online acquisition

▸ *H&R Block puts CompuServe on the block*

By Stewart Deck

AMERICA ONLINE, INC. last week danced around questions regarding its designs on CompuServe Corp., after the parent of its rival confirmed that it had put the struggling online provider on the block.

An AOL spokeswoman said the popular Dulles, Va.-based online service "does not comment on market rumor," even in this case, when a portion of the rumor has been confirmed by CompuServe parent H&R Block, Inc.

Linda McDougall, an H&R Block spokeswoman, said she couldn't say if H&R was talking with only one company. CompuServe wasn't available for comment and didn't return phone calls.

But AOL tops the list of likely buyers assembled by industry observers. Other candidates include Microsoft Corp., one of the regional Bell operating companies (RBOC), GTE Corp. and Time Warner, Inc.

Ulric Weil, an analyst at Friedman, Billings, Ramsey & Co., an Arlington, Va.-based investment firm, said some suitors may be interested in acquiring pieces of CompuServe but not the entire company.

AT A GLANCE

For example, he said Microsoft might find CompuServe's subscribers an attractive purchase but wouldn't be interested in the CompuServe network technology because The Microsoft Network rides on UUnet Technologies, Inc.'s backbone.

AOL stands out as a candidate for several reasons. The company has been looking at several ways to expand its network, said Rebecca Wetzel, director of Internet consulting at TeleChoice, Inc., a Verona, N.J.-based consultancy. The addition of CompuServe's network would give AOL's frustrated users more capacity.

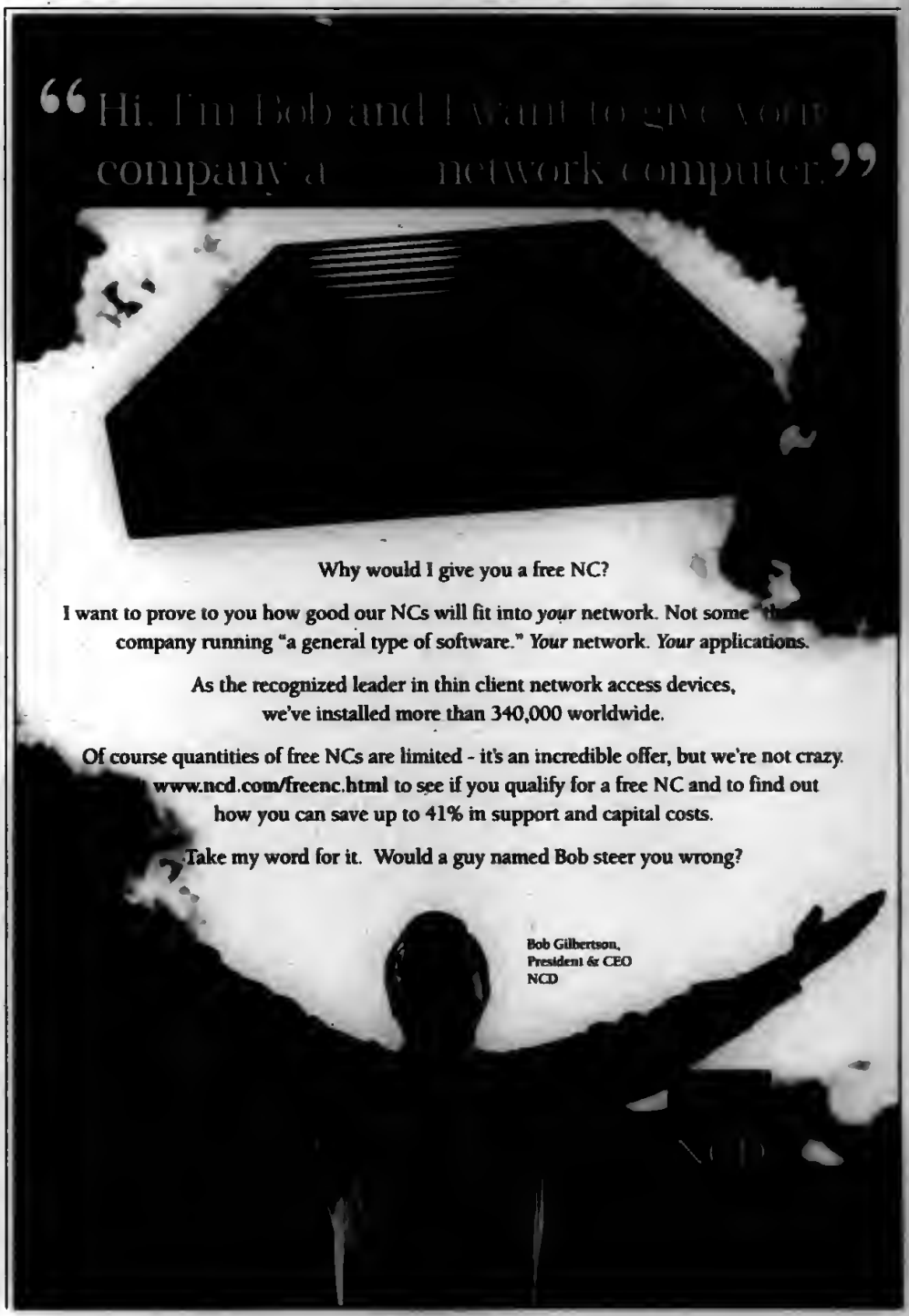
"This also gives AOL a way to migrate subscribers away from its $19.95 service to higher-value service offerings," said Barbara Ells, an analyst at Zona Research, Inc., a consultancy in Redwood City, Calif.

CompuServe's recent network infrastructure upgrades also are attractive, Ells said.

CompuServe's subscriber base is another attraction, said Michael Murphy, editor of "The California Technology Stock Letter," a newsletter in Half Moon Bay, Calif. Murphy said AOL's customer acquisition expenses — as much as $300 per subscriber — are making it difficult for AOL to turn a profit "no matter who they buy or what they do."

Murphy said the supposed negotiations between the two online services remind him of another historic partnership. "It reminds me of the two big steam engine companies joining forces in 1918 to combat the gas-powered engine manufacturers," he said.

Several analysts said CompuServe and its 2.9 million worldwide subscribers also might prove tempting for an RBOC since these phone companies will need to offer more services than just long-distance to attract and keep customers. The more services — including CompuServe's Internet access — that an RBOC could provide, the harder it would be for a customer to cancel its entire service relationship. □




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Bay Networks boosts Rmon 2 support

▸ *New stand-alone monitor keeps tabs on network*

By Patrick Dryden

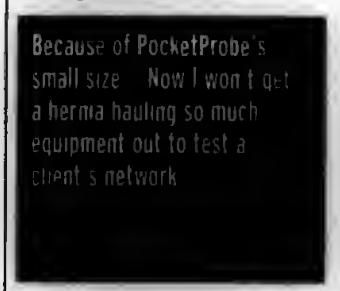
BAY NETWORKS, INC. last week announced broader support for the recently standardized Remote Monitoring (Rmon) 2 specification with two open tools that analyze network performance.

Bay's enticements include PocketProbe, a small stand-alone monitor that costs roughly half as much as competing products. Bay also announced upgraded Optivity Analysis software, which interprets data gathered by any standard-compliant probe or agent embedded within internetworking gear.

Some Bay users welcomed the standard tools, which are due out by next month. But others said proprietary products will suffice for now.

"My clients prefer a standard monitoring approach to individual vendors' probes and agents running on PCs," said Andrew Jazwinski, president of Network Performance Corp., a consultancy in Dunkirk, Md.

But because the Internet Engineering Task Force didn't approve Rmon 2 until last month — a move that unleashed the shipment of compliant products — "users had turned to proprietary tools for tuning performance and tracking usage for chargeback," Jazwinski said.



The second-generation Rmon standard defines ways to track network and application activity between clients and servers. The original Rmon standard watched packets flow only through a single segment, but vendors added their own extensions to reveal higher-level information.

"We could upgrade the agents in our Bay hubs to gather Rmon 2 data, but we don't need a lot of this information," said Debby Briggs, a wide-area network consultant at Healthsource, Inc. in Hooksett, N.H.

Bandwidth utilization is stable, Briggs said. And Healthsource already has adequate tools, she said, including Ecoscope from Compuware Corp. in Farmington Hills, Mich., and Network Health from Concord Communications, Inc. in Marlboro, Mass.

The $1,495 price of the upcoming PocketProbe spells relief for Bay user Tim Carlin, an infrastructure technologist at Toys R Us, Inc. in Parsippany, N.J.

The price is low enough to deploy probes throughout Toys R Us stores for more accurate monitoring and troubleshooting of network traffic problems, Carlin said.

Previously, Bay's Rmon probes cost $2,800. Customers who buy in volume should get the combination Rmon and Rmon 2 probe for $1,000 each, Jazwinski said. Stand-alone Rmon probes have been "too damn expensive," he said, which has kept large organizations from fully deploying the instruments in their networks.

Bay also offers Rmon 2 upgrades for management modules that are embedded in its internetworking gear.

Other vendors preparing Rmon 2 support for their products include 3Com Corp. in Santa Clara, Calif.; Hewlett-Packard Co. in Palo Alto, Calif.; and NetScout Systems, Inc. (formerly Frontier Software Development, Inc.) in Chelmsford, Mass. □

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Bay slashes price on 10M/100M switch

By Bob Wallace

BAY NETWORKS, INC. last week smashed the $500 per port price barrier for 10M/100M bit/sec. switches by releasing a system that weighs in at $249 per port.

Bay's BayStack 350 Autosense Switch lets information systems managers scale bandwidth from 10M to 100M bit/sec. on each port without having to buy a replacement switch. And the rock-bottom price eliminates sticker shock.

Desktop computers need a 10M/100M bit/sec. adapter card to use the switch. These cards are available from a number of sources, including 3Com Corp. and Intel Corp., both in Santa Clara, Calif., for $100 to $200 when bought in quantity.

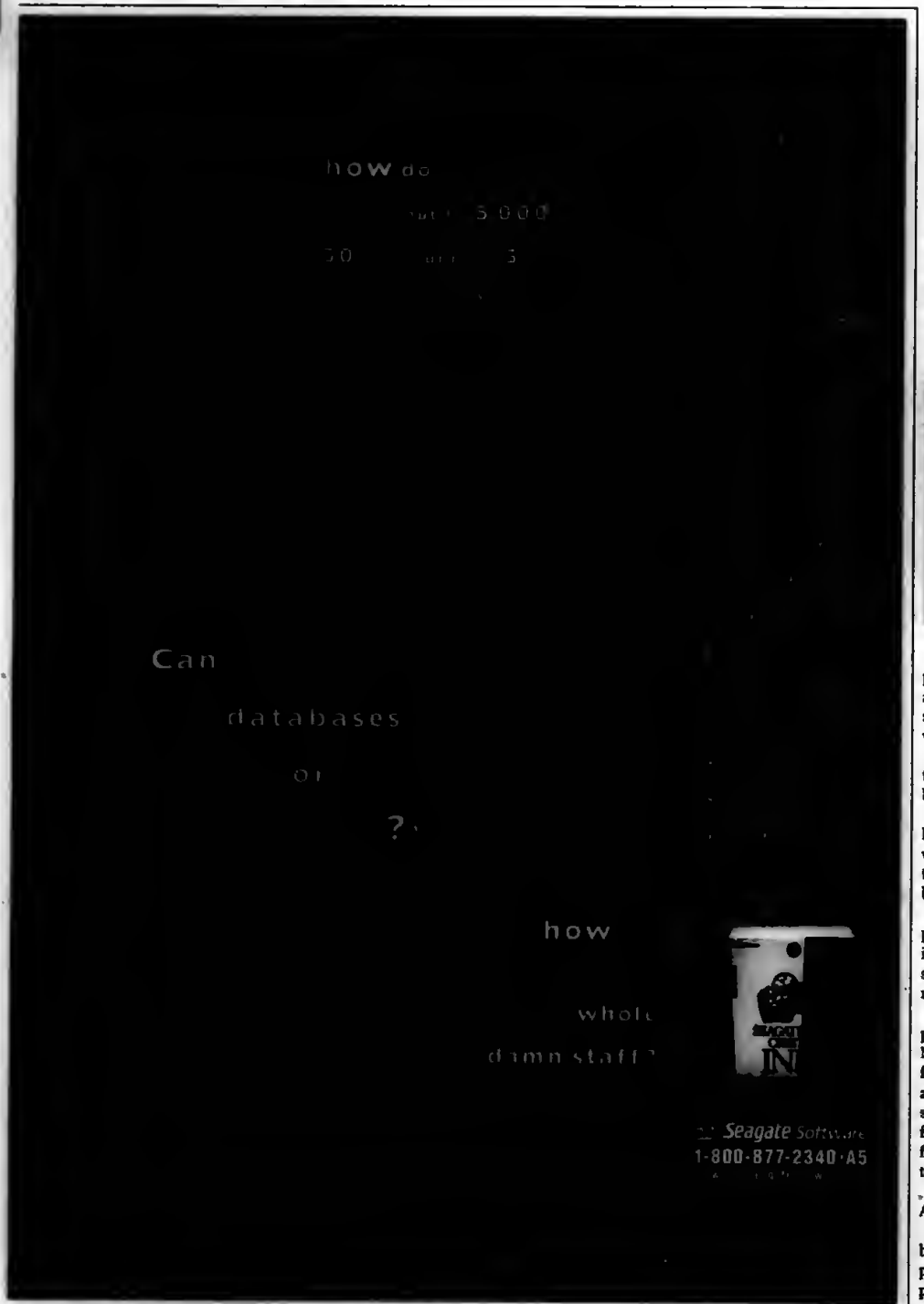
Although analysts stressed that changes to existing desktop computers are unpopular with users, most major vendors equip all new PCs and workstations with the 10M/100M bit/sec. cards.

Santa Clara-based Bay has been shipping a 10M/100M bit/sec. switch, called the 28115, for several years. The switch originally listed at roughly $1,000 per port, but Bay later reduced the price to the $600 to $700 per port range.

But to the surprise of one analyst, Bay doesn't plan to offer incentives for 28115 users to move to the cheaper BayStack 350. That is significant because massive industry consolidation is intensifying competition.

"Bay needs to do a good job of tying down its client base," said Jim Metzler, vice president of consulting services at Strategic Network Consulting, Inc. "Bay's mind share in the user community is not ascending. They need to keep 28115 users from becoming free agents."

Metzler said he thinks Bay could do that by inducing 28115 users to buy the more advanced and less expensive BayStack 350 once the older switches have been depreciated. Otherwise, he warned, those users are likely to move to similar switches from rivals, especially if prices are cut on those systems.





Bay doesn't seem concerned. "At this point in time, no trade-in type programs are planned," said Hossein Alaee, a Bay senior product manager. "If the 28115 was going away, then we'd consider it."

Although Bay has the lead of the top-tier network companies in 10M/100M bit/sec. switch pricing, that may not last.

"I don't think Bay will be the price leader for long," Metzler said. "I wouldn't be surprised if Intel and others took them on. Pricing competition will be brutal, but great for users."

An Intel spokesman said the company plans to reduce the $624 per port cost of its recently announced 10M/100M bit/sec. switch but wouldn't say by how much or when.

Bay couldn't have hit the $249 price point this quickly if it hadn't acquired NetICs, Inc., an Acton, Mass., start-up, for roughly $100 million late last year, analysts said. NetICs makes application-specific integrated circuits (ASIC), which function as the brains of switches. It was faster for Bay to buy the technology than to develop it internally.

In fact, development problems with ASICs are what kept the 28115 pricey.

The BayStack 350 has a 1.2G bit/sec. backplane and is shipping now with 16 ports for $3,995. A second model with 12 ports and two Fast Ethernet uplinks will ship in June for $4,995. □

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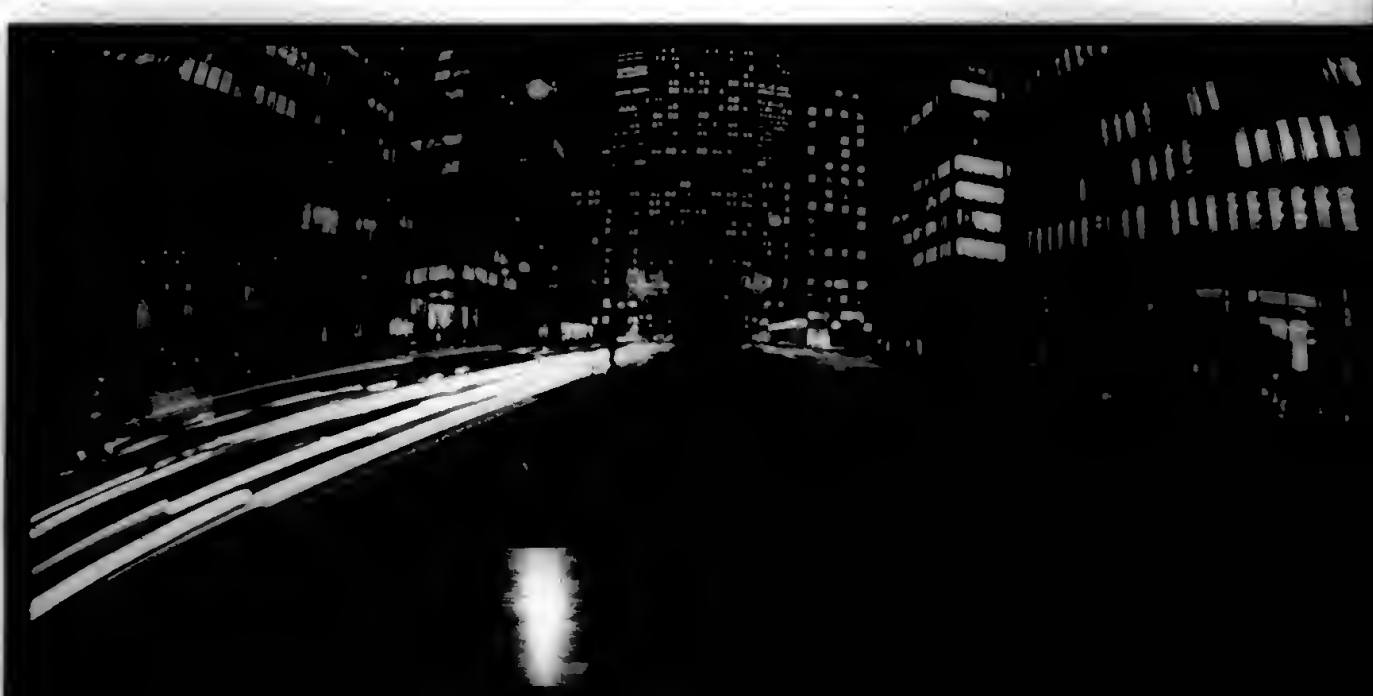
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CD storage revs up

▸ *Software eliminates premastering process*

By Matt Hamblen

SMART STORAGE, Inc. next week plans to introduce software that eliminates the laborious premastering process when storing information on compact discs for use in a CD jukebox.

The SmartCD software allows "CD recording to be as easy as saving data to a hard disk," said Michael Peterson, president of Strategic Research Corp. in Santa Barbara, Calif.

AIIM '97 SHOW

Andover, Mass.-based Smart Storage will introduce the software at the AIIM '97 (Association for Information and Image Management) show next week in New York.

ADVANTAGES

There are plenty of advantages to using CDs for storage, analysts said. CDs are small, durable and can run on any PC equipped with a CD-ROM drive. Analysts said the SmartCD software may help increase the popularity of CDs used to archive data in large organizations.

Fleet Bank N.A. in Hartford, Conn., is using the latest beta version of SmartCD on Windows NT 4.0 to write CDs that store scanned copies of canceled checks for hundreds of commercial customers, including insurance companies. Federal law requires that companies keep check archives for seven years.

"It's working out real good, with increased throughput and good control," said Robert Claus, vice president of systems and technology at Fleet. "[The software] can multiread, which means it can perform more than one function at the same time. So we can load data to the CD writer, and while it starts writing a CD, we can load more data for another CD."

Fleet also scans both sides of canceled checks and can store the data at its site or ship customers the written CDs with labels.

A staff of 10 handles CD scanning and writing around the clock, so Fleet can archive 2 million to 3 million checks per month, Claus said. The bank produces about 130 CDs' worth of checks in a month, he said.

SmartCD also is being used to control the robotics of Fleet's CD jukebox from Eastman Kodak Co. in Rochester, N.Y. The jukebox holds 75 CDs and moves each CD to a writer drive. By eliminating the premastering process, Claus said he has reduced his CD writing time from up to an hour to about 20 minutes.

Each blank CD-Recordable disc costs about $9. Each check image costs 2 cents. Customers can take the CDs and play them on jukeboxes in their own offices for near-line retrieval. That reduces the time it takes to find an old check from one to two days via the old microfilm method to about 30 seconds with CDs in a jukebox.

"Customers can pull up a check almost instantly to check for fraud or other questions," Claus said.

Adaptec, Inc. in Milpitas, Calif., recently released DirectCD for writing a single CD on a desktop PC by moving a file directly to a drive letter without premastering.

STEPS IN PREMASTERING

1. Define contents to write
2. Identify the format
3. Gather data on a hard disk
4. Create an International Standards Organization image
5. Copy the image to a CD-Recordable disc

Smart Storage's competitor to DirectCD is FloppyCD.

Smart Storage plans to ship SmartCD for jukebox usage in the summer for NT and in the fall for Unix and Novell NetWare, company officials said.

Analysts added that SmartCD may lead a market segment that will be popular for perhaps another two years. Then, they said, Digital Video Discs may begin to eclipse CD-Recordable technology. □

Minolta to spin off its imaging systems line

By Barb Cole-Gomolski

MINOLTA CORP. later this month will spin off its imaging systems business as a separate company that will introduce a new line of imaging software and hardware.

Minolta Information Systems, Inc. will take over development and support of Minolta's imaging products and launch a line of component-based imaging software and storage management devices, said Glenn Magnell, president of the subsidiary.

NEW YORK DEBUT

Minolta is expected to announce the plan at the AIIM '97 (Association for Information and Image Management) show next week in New York.

"This gives me a greater sense of Minolta's commitment [to its imaging business]," said JoAnne Olson, director of member relations at Health Insurance Plan of Greater New York, a health maintenance organization that uses Minolta's imaging system. She explained that segregating that line of business could make it easier to deal with the company and get information about the company's imaging products.

Minolta hopes the new subsidiary will fill the need that large companies have for far-reaching imaging systems that handle everything from desktop image processing to back-end storage, Magnell said. It will compete against veterans such as IBM and FileNet Corp.

The spin-off initially will target the medical industry, government and the distribution and order-processing niches. Its DocX product line will be aimed at companies that seek to knit together imaging components — including those from other vendors — into one development environment.

Also planned is a server to handle high-speed image processing and character recognition and a World Wide Web server for users who wish to access images via Web browsers.

Minolta has been in the imaging systems business for eight years but isn't identified as a software or systems house, Magnell acknowledged. "We want to make a statement that we're really in this business and create a corporate culture where we can attract the right talent," he said. The subsidiary also will focus on building a systems integration practice around its products, Magnell said.

COMMON SENSE

Carl Frappaolo, a vice president at Delphi Consulting, Inc. in Boston, said a spin-off makes sense for companies such as Minolta that are household names recognized for office equipment or cameras.

Eastman Kodak Co. in Rochester, N.Y., recently created a subsidiary, Eastman Software, Inc., after buying out Wang Laboratories, Inc.'s imaging software unit.

The Minolta subsidiary will initially employ about 60 people and will be based in Mahwah, N.J., not far from Minolta's Ramsey, N.J., headquarters. Its new DocX products will roll out over the summer. □

READY, AIIM, FIRE

The following products will be highlighted this week at AIIM '97:

Company	Product	Function	Availability
Datacap	Paper Keyboard 97	Data and image capturing software for Windows 95 and Windows NT	May 1
JetForm	JetForm WorkFlow 2.0	Server-based workflow for messaging and database systems	End of April
RightAngle Systems	Motiva	Product life-cycle management system based on Microsoft's Distributed Component Object Model	Q2 '97

Marketing organization targets spam

By Stewart Deck

THE DIRECT Marketing Association (DMA) knows better than anyone how counterproductive and annoying unsolicited mail and unwelcome telephone calls can be from businesses seeking new customers.

And now the industry group is trying to do something about unwanted ads delivered by electronic mail — or what online denizens often derisively call "spam."

The association is seeking proposals for a global DMA E-mail Preference Service (E-MPS) that would let Internet users ask that their addresses be removed from E-mail marketing lists.

That follows a pattern the association established with its successful Mail Preference and Telephone Preference services, which let consumers remove their addresses and telephone numbers from direct marketing lists used by bulk mailers and telephone solicitors.

"Direct marketers understand that an effective global E-MPS system will allow them to be responsive to consumers who desire not to receive unsolicited marketing E-mail," said H. Robert Wientzen, president and CEO of DMA, in a prepared statement.

"Such a free-choice system is essential for online marketing success," Wientzen said.

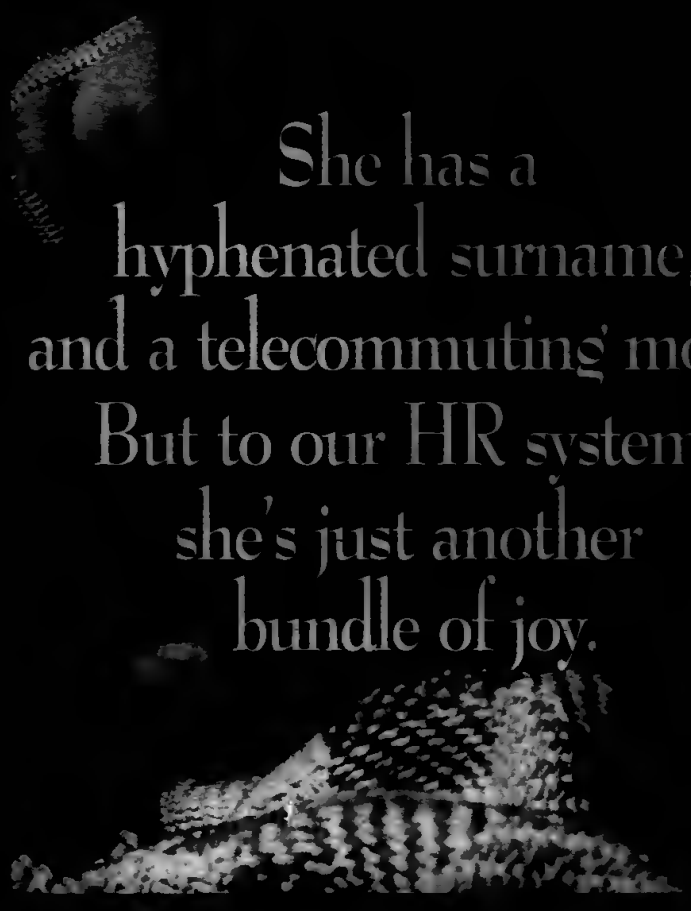
The association said it hopes to have the system up and operating six months after it awards a contract.

The deadline for submitting proposals is May 5. □

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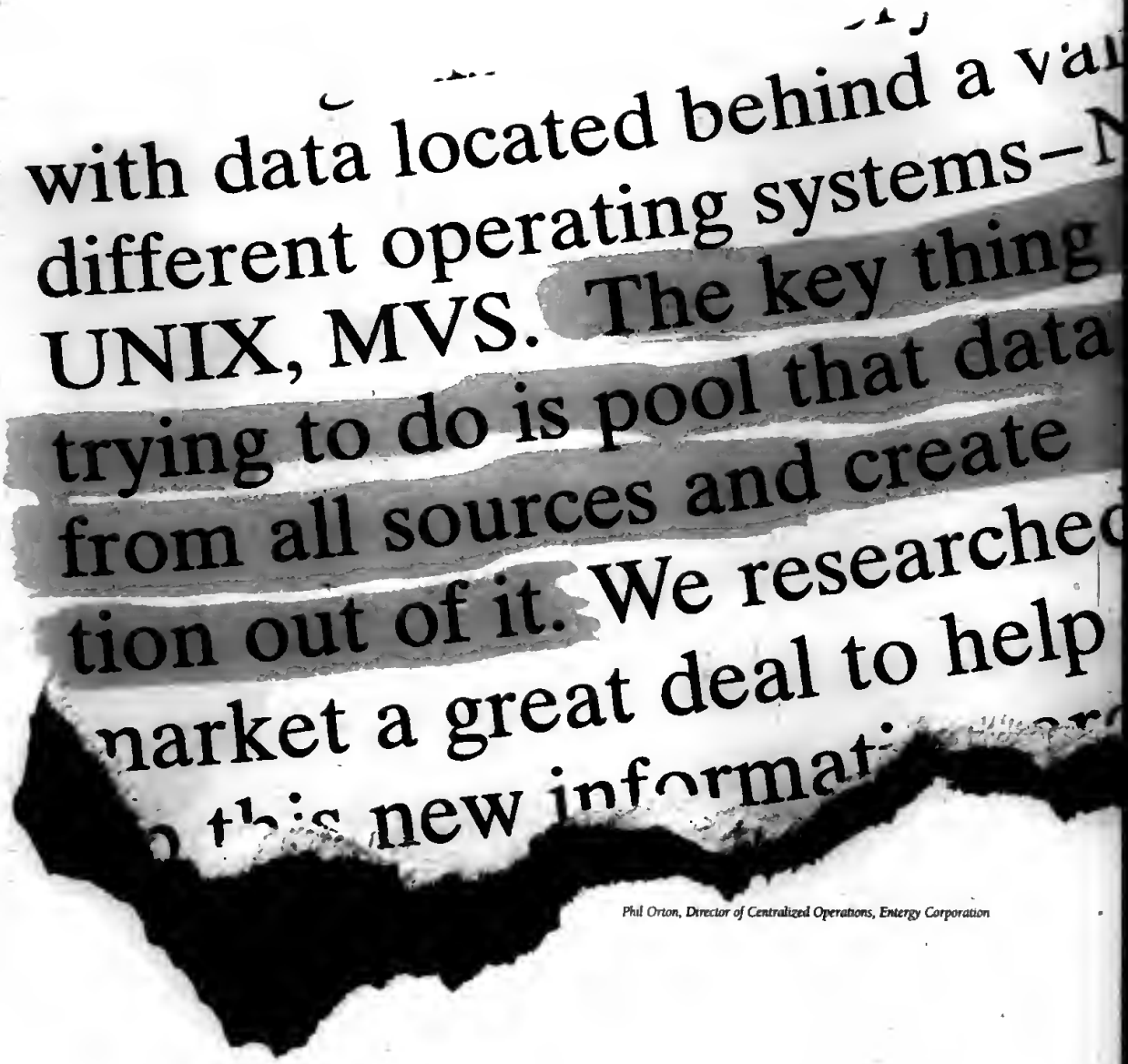


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Briefs

Focus on object database trips Informix

▶ *Object database focus blamed for Q1 debacle*

By Craig Stedman

SUDDENLY, Informix Software, Inc. looks less like a threat to Oracle Corp. and roore like a beleaguered brother-in-arms with Sybase, Inc.

Six Informix users last week said they weren't spooked by the database vendor's stunning announcement that it will report a whopper of a first-quarter loss on sales almost 50% below what financial analysts had projected. Most of them chalked up the unpleasant surprise to short-term issues that stem from Informix's aggressive marketing of its Universal Server database.

But analysts said the magnitude of the expected loss and revenue drop-off will likely leave Informix reeling until late this year at best. And with Emeryville, Calif.-based Sybase still trying to recover from three straight quarterly losses last year, Informix's woes leave Redwood Shores, Calif.-based Oracle looking down securely from its database perch at a pair of weakened rivals.

"The size of Informix's miss is just monumental. It ranks with the all-time major disappointments," said James Pickrel, a database securities analyst at Hambrecht & Quist, Inc. in San Francisco.

Pickrel had expected a first-quarter profit of almost $20 million on revenue of $255 million for the Menlo Park, Calif., company. His revised prediction is a loss in the $40 million range after Informix said sales could be as low as $130 million. Pickrel cut his revenue forecast for all of 1997 from $1.2 billion to $715 million — a 40% whack.

Informix executives and outsiders blamed the first-quarter debacle on two main failings: Too much marketing hoopla was invested in Universal Server at a time when most users weren't ready for its object/relational features, and a major sales force reorganization that was started in late 1996 wasn't executed well.

"You need to preach your vision and sell your products, but Informix has been selling its vision and ignoring its real products," said Gary Thomson, vice president of information systems technology at Choice Hotels International, Inc. in Phoenix, a big Informix user.

"Informix has been selling its vision and ignoring its real products."
– Gary Thomson, Choice Hotels

Nevertheless, Thomson said he remains an Informix fan and may use Universal Server to add Internet and text support to the hotel chain's reservation system. "I think they're ahead technically, and one bad quarter doesn't mean they're going down the drain," he said.

Universal Server is also only available on two Unix platforms now, and even some users who develop applications for the new database said they need promised functionality additions before they can go live with the software.

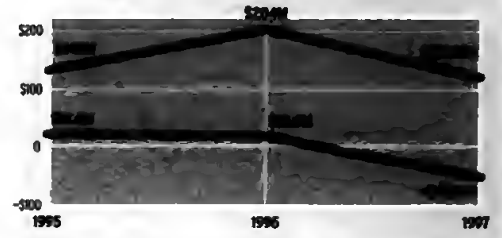
"We don't buy betas, and for our needs, it's a beta product," said Brad Jensen, a vice president at Sabre Decision Technologies, the software development arm of AMR Corp. in Fort Worth, Texas. But the impending loss "doesn't scare me at all," Jensen said. "It's pretty clear that Informix is still ahead of Oracle in this embedded object concept."

Brett Bachman, general manager of enterprise products at Informix, declined to discuss the financial situation during a separate telephone briefing. But he said Informix now plans to "redouble our efforts" to market its mainstay OnLine relational database family.

The announcement sent Informix's stock price tumbling by 40% last Tuesday and Wednesday. Company officials wouldn't say whether any layoffs, management changes or product scuttlings will follow when full results are released later this month. □

LOOK OUT BELOW

Informix's first-quarter revenue and profit history



* Preliminary estimate by Informix, ranging from $130M to $145M
** Analyst estimate, not including any potential onetime charges, ranging from -$39M to -$47M

MERGERS

Ascend to buy Cascade in bid to challenge Cisco on WAN turf

By Kim Girard

ASCEND Communications, Inc. capped off a recent spending spree last week with a $3.7 billion offer to purchase Cascade Communications Corp. The deal puts Ascend in position to compete with market leader Cisco Systems, Inc. in the wide-area network market.

But Ascend's stock tumbled last week after some analysts said the remote access vendor paid too much for the Westford, Mass.-based switch maker. Analysts are anticipating weaker-than-expected first-quarter earnings from Cascade.

Analysts did say the deal will provide Ascend with the end-to-end product line needed to better compete with Cisco, which acquired Cascade's biggest competitor, StrataCom, Inc., in a $4 billion stock deal last year.

But Ascend's stock plummeted $11.25 to $40.75 per share last Monday, whittling the value of the stock swap deal.

Greg Rossmann, a principal at Broadview Associates, a mergers consulting firm in Fort Lee, N.J., said the tumble may reflect doubt about Ascend's ability to integrate the product lines. "The biggest challenge is creating an integrated suite of products, a pricing matrix that's rational and a customer support system," he said.

Through the deal, Ascend will add Cascade's frame relay and Asynchronous Transfer Mode (ATM) switch offerings to its remote access product line.

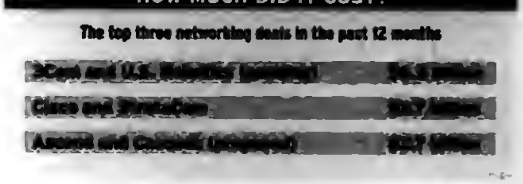
Last month, Alameda, Calif.-based Ascend pledged $70 million to buy Whitetree, Inc., a developer of LAN switching products based on Ethernet and ATM. In January, Ascend spent $29 million for StonyBrook Services, Inc. to acquire its network management applications.

With Cascade, Ascend will be able to satisfy the networking equipment needs of Internet service providers — where Ascend has focused its energy — and carriers' central offices, according to Christine Heckart, an analyst at TeleChoice, Inc. in Verona, N.J.

The deal, which must be approved by the government and stockholders of both companies, is expected to close in the third quarter. Under the agreement, Cascade President and CEO Dan Smith will join Ascend as executive vice president and general manager of the switching systems unit, and Mary Ejabat will continue as Ascend's president and CEO. □

HOW MUCH DID IT COST?

The top three networking deals in the past 12 months



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70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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95. Other _____ (Please Specify)

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22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Dev.Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet?

☐ Yes ☐ No

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3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Dev.Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet?

☐ Yes ☐ No

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Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Dev.Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)

(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

5. Do you use the Internet?

☐ Yes ☐ No

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OPINION

Users need it all Notebook computer makers and their users are on different pages, and it's the vendor community that must change if it hopes to drive new generations of business applications.

It's easy to be amazed at how much power today's notebooks pack. We carry near-desktop capabilities in a briefcase and can run video clips with the sound and the fury of the latest action flick. But despite the progress, notebooks just don't have the reliability, integration and ease of use that users need.

A recent *Computerworld* article detailed how IS managers and users are frustrated with notebooks that break during normal use. Vendors counter that users ask for the moon, demanding feature-packed notebooks that are light and inexpensive, yet durable — an unlikely combination.



Another story detailed a study that showed an even greater user/vendor disconnect: Vendors promote faster chips while notebook users beg for greater battery life and compatibility between hardware and software.

What do users really want? All of it — power, storage, durability and usability — and for good reason.

The advanced applications we've talked about for years promise access to all your information wherever you happen to be. Gee-whiz features such as universal messaging are useful only if you can get to them in the same way from your office, home and an airport lounge.

Tomorrow's notebook will need the capabilities found in the desktop PC. The needed improvements, besides durability, range from common log-on scripts to CD-ROM drives that are standard equipment.

The challenge for notebook vendors is to provide all of this while hitting the customer's price point and weight limit. Various alternatives — such as Web-enabled cellular phones and network computers — already are chipping away at key notebook sectors. If notebook vendors don't move quickly, they risk losing their place as a key vehicle in a new era of computing.

James McConnolly

James Connolly, *technology evaluations editor*
Internet: *james_connolly@cw.com*



LETTERS

Network with online seekers

Regarding your Feb. 10 article on Internet recruiting ["IS: Point-and-click recruiting falls short"]: After working with the Internet for about five months, I have hired only two people directly from the Web. But through conversations with people who have their resumes on the Web, numerous qualified potential employees have been referred to me.

Any good recruiter knows you're not going to get your most qualified, interested and affordable candidate on the first try. Network with them, and your success will be your reward.

Brandon Reiff
IT recruiting consultant
R. D. Raab and Co.
Glen Allen, Va.

Bias against Apple is clear

While Apple users complain of the media's bias against the company, publications such as *Computerworld* vigorously deny this. Yet a clear instance of bias appeared in your Feb. 17 issue on the front page.

The headline [in the "Inside this Issue" box] says, "First 200-MHz laptop," ignoring the three high-end Macintosh PowerBooks released the same week running at 240, 200 and 180 MHz. Please discard your blinders and recognize there is some real good stuff out there. You should be informing your readers about it; otherwise, how am I going to trust a reputed journal to keep me updated?

Murli Nagasundaram
Assistant professor,
computer information systems
Boise State University
Boise, Idaho

Intranets hold legal peril

I read with interest the article on becoming Web-enabled via suite software ["Users getting Web-enabled," CW, Feb. 3]. The author quoted companies where once inaccessible information is now served up by department web pages routinely. As a lawyer who occasionally drafts discovery of electronic materials, this started me thinking about how the information for legal cases might be developed in the future.

Imagine court-sanctioned or required browsing of your corporate intranet by an opposing party in a lawsuit. Or such parties having access to the same web pages that company employees do. Or being granted special access to all pages mounted. In some ways, intranets make legal discovery ridiculously easy. Think about it.

David McIlwain
Potomac, Md.

No money in high-end NT

Nice job on the Feb. 10 story "Unix holds high ground against NT." This has major implications for the zillions of NT developers who are hoping to make big bucks selling high-end operating system and application tools.

They probably won't make the dough, due to Unix holding on to the high end. NT users have a mental block about paying big bucks for anything. The biggest winner will probably be Microsoft, as it sticks the functionality into NT for free or for a very modest fee. Of course, users will win too, having to pay less for more.

Dave Buerger
Duluth, Ga.

A new twist on year 2000

Because of my job, I am very concerned about the year 2000 problem. Fortunately, your magazine has done an excellent job keeping this issue in the forefront.

I have discovered a new twist on the problem, which I have yet to read about in any of the trade journals. According to the *Encyclopaedia Brittanica*, 2000 (which is evenly divisible by 400) is not a leap year. Therefore, Feb. 29, 2000, is not a valid date.

There will be no Feb. 29 2000

So far, we have tested several of our key application platforms: Windows 95, Lotus 1-2-3 for Windows Version 5.0, HP-UX 9.04 calendar command and Advanced Pick 6.1.16.

All these programs incorrectly recognize Feb. 29, 2000, as a valid date. I suspect this problem is widespread and would like to bring it to your attention.

Mark L. Olsen
Director of information services
Ace Parking
San Diego

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Death of the computer salesman

Patricia B. Seybold

For years, the process of buying computers was very stable. You either walked into a store, called an 800 number, placed an order with a reseller or dealt with a manufacturer's sales representative. But World Wide Web commerce is about to change all that — for the better.



Web commerce promises to revamp the process of buying computers.

Most of the computer industry relies on expensive, multitiered distribution channels. Manufacturers pass products to distributors, who provide them to resellers, who configure the products and deliver them to end users. The biggest cost is keeping the entire pipeline filled with inventory.

A few manufacturers, such as Dell, sell and deliver directly to customers. Many vendors sell directly to their largest accounts, but configuration, delivery and installation are often handled by third parties.

But with the Web, it's now possible to go online, configure computers to meet your particular needs and do comparison shopping, assessing the trade-offs among features, price and availability. You can place an order directly from many Web sites, and that order will be filled within a specified period of time — often by the next day. Not only are PCs and peripherals being sold this way today, but so are workstations and pretty sizable servers.

The next-generation configuration engines coming to the Web will ask you which applications you want to run and with what kind of user and transaction loads. The engines will then recommend the right models and options for your needs.

Soon you won't want or need to call your friendly computer salesman. You'll have all the information you need at your fingertips.

Smart resellers and manufacturers, following Dell's lead, are building (or have built) "configure and buy" Web systems. Although they have voiced concerns about competing with their other distribution channels, the pressure is on for them to sell directly to any qualified customer who prefers to deal directly with the manufacturer.

These online configuration and quoting capabilities will prove valuable for the corporate computing "influencers" — the people who decide which computers your company should use for particular kinds of applications — as well as the power users who want to specify their own machines.

But buyers in the IS purchasing department will need an additional layer of functionality that will soon be on the market. The purchasing department needs to negotiate quantity discounts, service contracts and other terms and conditions for the makes and models of computers the influencers have selected. Once that is done, the company can let end users shop online through a Web interface that automatically configures the products and prices to comply with the company's terms and conditions.

Through this, end users will order only approved products, under prenegotiated terms. Workflow software can then automatically generate a requisition, route it to the user's manager for approval, send it to the purchasing department for approval, generate a purchase order and track the delivery.

Thanks to the revolution in Web commerce, we'll soon have a streamlined buying process with cost savings and economies for all involved. Manufacturers can build to order. Resellers won't have to stock inventory. Logistics companies can ship products as they're built. Influencers and end users can select what they want from a database of what's available when they need it. And purchasing departments can control and monitor expenses.

Sounds good to me. What's not to like? □

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is pseybold@psgroup.com.

Make peace with guerrilla intranets

Michael Schrage

Back-of-the-envelope calculations always risk embarrassment. But an intriguing article in last month's *PC World* on do-it-yourself intranets provoked me into whipping out my Sharp Wizard to do a bit of retrospective math on the economics of departmental computing.

The numbers were compelling: In hard-dollar terms, it's less expensive to set up a departmental intranet in 1997 than it was to set up a departmental desktop publishing operation in 1987.

In other words, the economics of growing a grassroots intranet in the 1990s rival the economics of launching desktop publishing in the 1980s.

That raises questions that should interest every IS department in every Fortune 1,000 company.

Could we possibly be experiencing deja vu all over again? Are surreptitious intranets being covertly funded by innovative departments today, just as "office supplies" budgets subsidized the purchase of PCs and laser printers more than a decade ago? Could we see intranet power users evolve in ways analogous to power users of PCs?

Within 90 minutes of landing in Chicago — I read *PC World* on the plane; you don't think I actually subscribe, do you? — I had called two friends at giant companies to find out if, indeed, their organizations had spawned non-IS-sponsored, grassroots departmental intranets. Shall we call them "intranettes"?

Two days later, I got E-mail that made me smile. Much to their surprise, my friends had discovered more than 10 unauthorized intranettes between them. The bottom-up, bootleg quality that marked the rise of the corporate PC had a strong intranet echo at their companies.

Of course, generalizations about intranets are even riskier than back-of-the-envelope calculations. Then again, there is a persuasive economic logic to the rise of intranettes that's every bit as compelling as the rise of enterprise intranets. If IS departments aren't swiftly and creatively responsive to the networking needs of their departmental constituencies, why shouldn't intranettes be an appropriate response?



The best way to grow the intranet may be to knit together the "intranettes."

Precisely because intranets manifest the ethos of decentralization, an embarrassment of intranette riches makes every bit as much economic sense as a top-down, IS-sanctioned intranet.

I don't believe for a moment that a typical Fortune 1,000 organization will see a war between its bootleg intranettes and the sanctioned intranet. But just as power users drove PC penetration and IS departments crazy during the past decade, isn't it plausible that intranette-innovative departments will wield a powerful influence on the pervasiveness and potential of the corporate intranet? Many companies don't have a clue how many intranettes are running intradepartmental communications and collaborations.

Maybe an "intranette audit" isn't a bad idea. But a better idea would be to consider knitting intranettes together as the best way to grow the organization's intranet.

Should IS champion top-down or bottom-up distributed architectures? The answer to that question seems to be becoming less and less clear. □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

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COMMENTARY

Novell can't do it alone

DAVID MOSCHELLA

HAS NOVELL TURNED the corner? The answer depends on how Novell handles the following market realities. All things being equal, it's easier for customers to use one software supplier rather than two.

To prosper in an increasingly Windows NT-driven industry, Novell must provide enough value to warrant a multivendor approach. Then it must successfully communicate that value to new and existing customers.

A corollary to this theory is that the bigger the company, the more likely it is to use multiple vendors. Small businesses often choose Microsoft or Novell, but increasingly they choose the former. In the Fortune 200, there is often plenty of room for both. The middle is where the decisive competition will occur.



Because Novell's product strategy is now mostly in place, its focus has shifted to sales and marketing. Enter Eric Schmidt. Although many have emphasized Schmidt's "visionary" status, his main task will be articulation. Few people are better qualified to make the technical, business and intellectual case that a layered, multivendor network software environment is — and will continue to be — the optimal customer path.

But it isn't enough just to say you offer real customer value. In today's competitive ecosystem, the support of other industry leaders is a critical part of the marketing message. Here, despite the recent flurry of agreements, the picture is still mixed. Although Novell's formal cooperation with Sun, Hewlett-Packard, Oracle and Netscape sounds promising, even a quick analysis reveals that the enthusiasm of those four players is considerably less than at full throttle.

HP was once the most neutral of IT vendors, but now it is firmly in the Wintel camp. Sun will work with Novell to promote Java, but NetWare and Solaris are anything but natural allies. Oracle's decisions to license Novell Directory Services (NDS) and set up a separate Novell applications division are, at best, modest steps. Meanwhile, IBM and Lotus remain notable missing persons.

Finally, when Netscape and Novell chose to set up a separate company called Novonyx, they acknowledged a real customer need but admitted that their two organizations couldn't effectively work together. If anything should have been sold or spun out as a separate company, it's probably Novell's GroupWise. The success of this product compromises Novell's position as a pure layered infrastructure provider and makes cooperation with other groupware vendors, such as Lotus/IBM and Netscape, so difficult.

Novell finally has the market's attention, but unless the latest round of partnerships quickly delivers useful products and services, the momentum soon will dissipate. The software industry has a real opportunity to establish major new non-Microsoft controlled standards — Java, Common Object Request Broker Architecture, Lightweight Directory Access Protocol, NDS and so on — but such opportunities have been squandered many times before.

Compared with the Microsoft juggernaut, the current level of cooperation, although improving, still looks too timid and too fragile. What ever happened to the concept of taking bold action? □

Moschella is senior vice president of research at Computerworld, Inc. and author of Waves of Power, The Dynamics of Global Technology Leadership *(Amacom). His address is david_moschella@cw.com.*

Coming in the April 14th issue of Computerworld

Managing the Next Generation of Web Applications

A Computerworld Custom Publications White Paper



The World Wide Web has ushered in a new perspective on the rate of change in information technology today. As an application platform, the Web is growing exponentially. And products are evolving at "Web speed," with new releases arriving in months instead of one or two years.

It is increasingly difficult for IT professionals to adapt to this rate of change and to users' insatiable requirements for access to information on the Web. This environment has created the need for comprehensive management tools — tools that are converging with new DBMS capabilities to create an intelligent Web information manager.

Judith R. Davis, principal with InfoIT, Inc., a DataBase Associates International company, and author of this White Paper, defines the requirements for an intelligent Web information manager and describes why this is becoming a key role for the ORDBMS — the object relational database management system.

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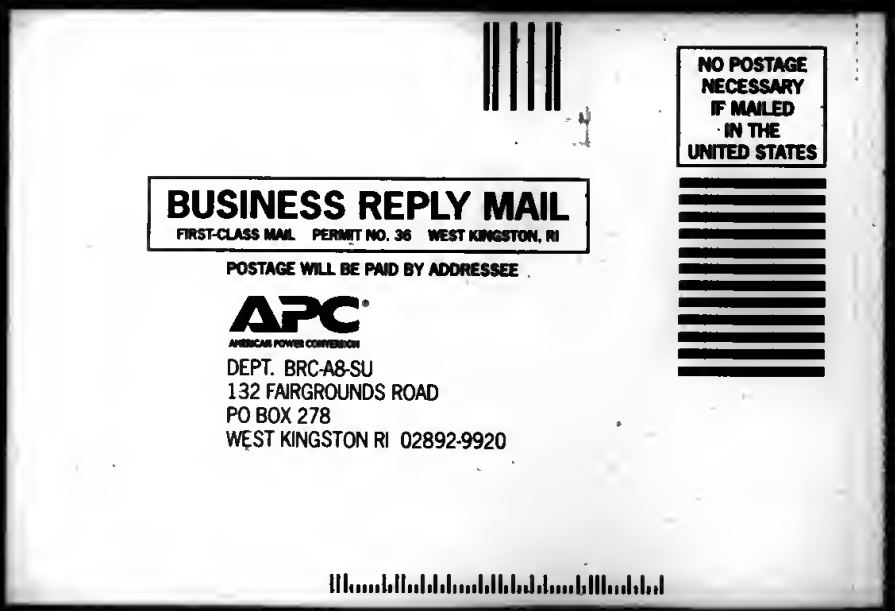
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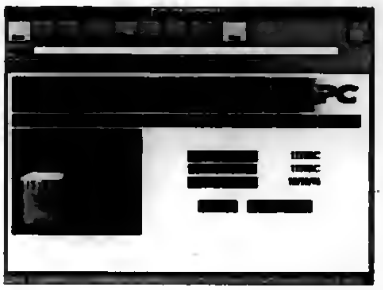
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- Microsoft Windows NT® Workstation
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Briefs

The recommended ratio of support staff to users:

Notebook users
1-to-100

Desktop workers
1-to-117

Sales force automation users
1-to-60

Source: Gartner Group, Inc., San Jose, Calif.

Serial storage gains ground as users seek more speed

By Tim Ouellette

MORE USERS are getting their hands on open systems storage devices that use faster interconnect technology than traditional SCSI-based machines.

Growing interest in network computers and thin clients, along with pilot projects in data warehousing and intranets, have led to a surge in demand for storage and servers attached to disk arrays.

And users know that faster disk drives aren't enough to ensure they get the data they want, when they want it.

For example, USA Group, Inc. in Littleton, Colo., bought IBM's 7133 Serial Storage Architecture (SSA) disk system to warehouse huge amounts of data used to develop predictive models. The models help predict college enrollment, part of USA Group's education consulting business.

SSA uses two 20M byte/sec. full-duplex channels between

Serial storage, page 44

Cards help net PCs get smart

▶ *Cost savings cited for swipe-card technology*

By April Jacobs

NEW SMART-CARD technology from IBM, Sun Microsystems, Inc., Oracle Corp. spin-off Network Computer, Inc. and Netscape Communications Corp. may make network computers more attractive during the next two years.

The companies have banded together to create OpenCard Framework, a standard that will make access to network computers by roaming users easier and let companies give end users access to the machines with the swipe of a card [CW, March 31].

The potential for the corporate community is to save money on end-user moves, which can be costly, and give multiple users access to a single machine based on their encoded privileges. Those privileges will be contained in an intelligent card

Smart cards, page 46

Smart cards, a plug-in technology, will let users do the following:

- Act as roaming network computer users to gain access to files and other data
- Plug in to PCs anywhere on a corporate network
- Electronically download cash, which can be stored and used like an ATM transaction

Upgrade helps Win CE get in sync

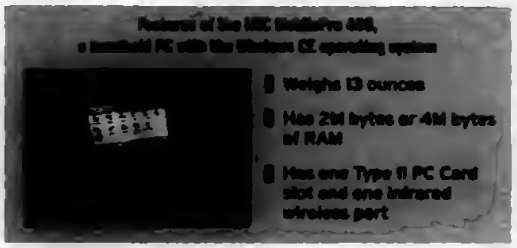
By Mindy Blodgett

MICROSOFT CORP. continued to beat the Windows CE drum last week by announcing an upgrade to the operating system for handheld PCs, or personal digital assistants (PDA).

Microsoft said Windows CE for PDAs will support data synchronization with Microsoft Outlook software and offer file formatting for Exchange and Excel. Windows CE will also synchronize with users of Windows NT Workstation.

Microsoft and hardware ven-

Microsoft, page 46





EVERYONE IS WATCHING THE BOTTOM LINE.

NOW YOU CAN SEE IT TOO.

As imaging becomes mainstream, budgets and the demands on technology explode. Shouldn't you focus on the monitors engineered to satisfy MIS and finance departments alike? The Nokia 445X series Innovative FullScreen™ technology give these 21" systems a full square 19.7" workspace. The 1600 x 1200 wall of pixels boast a dot pitch of just .22 x .16 mm. And the 445X Series can achieve a refresh rate of 150 Hz. In fact, Nokia is the first manufacturer to fulfill the new VESA™ standards for display clarity (which "future-proofs" your decision).

What's more, ergonomic synergies allow the 445X to deliver a range of resolutions and refresh rates mapped precisely to work in the real world. The result is a versatile tool for a spectrum of high-resolution imaging requirements. Rigorous adherence to new TCO'95, EnergyStar, and MPR-II standards is not compromised. So your contributions to productivity and fiscal responsibility come without trade-offs.

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Serial storage gains ground as users seek speed

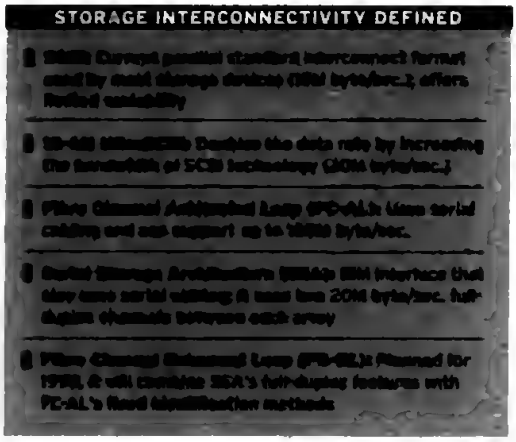
CONTINUED FROM PAGE 43

each array instead of the bulky parallel cabling that SCSI requires.

"We like the redundancy SSA brings so there are two links into the machine," said Andrew Ainslie, a database marketing consultant at USA Group.

"And SSA is a very simple connection to a large number of drives," Ainslie said. "It makes running different RAID architectures for different data sets easier."

Besides SSA, users can also choose between the popular Fibre Channel Arbitrated Loop (FC-AL) devices sold by a growing number of vendors, including Sun Microsystems, Inc., Amdahl Corp. and Data General Corp., and UltraSCSI, the next generation of SCSI technology (see chart).



STILL WAITING

SSA and FC-AL address the scalability issues of SCSI by using simpler serial wiring and allowing many more servers to be hooked to one disk array. But these approaches don't yet work together, which forces users to wait another two years before products emerge under a single interconnect standard called Fibre Channel Enhanced Loop (FC-EL). Until then, observers said all approaches will give users short-term performance benefits, although some additional bridging products will have to be installed to make SSA and UltraSCSI work with FC-EL.

But users seem willing to buy to get those gains.

IBM recently announced that it has sold 1,000T bytes of its SSA disk arrays. And this week, Sun will announce that it has doubled that number, selling 2,000T bytes of FC-AL storage for its Solaris servers during the past three years.

Analysts said the market momentum will be behind FC-AL, mainly because IBM is currently the only SSA vendor.

"Fibre Channel is dramatically faster than SCSI," said Andrew Prophet, president of Andrew Prophet Research & Consulting in San Jose, Calif. "And Fibre Channel vendors seem to be driving their costs down a lot faster than people expected, so there could be some price reductions for users."

PHOTON SYSTEM

Sun will release its second-generation FC-AL storage systems, code-named Photon, this summer and add support for Windows NT and Hewlett-Packard Co.'s HP 9000 servers by year's end.

And IBM will keep bolstering SSA to secure the investments many users have already made and attract its huge base of RS/6000 server customers to new storage products.

Last month, IBM began testing an SSA 160 chip that will double SSA speeds by next year. IBM also offers an interface card that lets HP and Sun Unix servers access SSA disk systems without requiring the servers to have SSA adapters or controllers. □

SHORTS

New notebook

Micron Electronics, Inc. in Nampa, Idaho, announced it will add midrange notebooks to its TransPort notebook line. The Micron TransPort VLX will be 1.6 in. thick. It will have 16M bytes of RAM, a 1.44G-byte hard drive and a swappable bay for either a floppy disk drive or a CD-ROM. The VLX will have an 11.3-in. screen. Prices start at $1,999. It is available now.

Compression aid

DataTools, Inc. in Palo Alto, Calif., this week will announce Data Optimizer, a Unix compression tool that lets users scale up data warehouses without purchasing new disk storage systems. The software also balances the I/O workload for storage systems and can be set to automatically begin compression if a disk system is getting full. Pricing starts at $5,000 for 25G bytes of storage space.

Video, graphics drive up storage requirements

By Matt Hamblen

DURING THE past decade, computer storage capacity has mushroomed along with the number — and size — of applications.

Storage engineers are cramming more bits per square inch on storage media, while the cost per megabyte has plummeted from hundreds of dollars to pennies.

Inexpensive storage lets users download huge files from the World Wide Web and store electronic mail on desktop or laptop hard drives. When graphic artists need more storage space, they simply use a removable hard drive from companies such as Iomega Corp. in Roy, Utah.

The increased use of graphics and video has caused digital storage to grow tremendously. "Anything in video is causing storage to grow," said Dennis Waid, president of Peripheral Research Corp. in Santa Barbara, Calif.

DIGITAL CITY MAPS

Stored digital video and graphics are in their infancy, Waid said. Hotels are beginning to offer guests city maps or views of plays and other entertainment around town. The data is stored on a server and streamed to guests' televisions or a lobby kiosk.

Storage needs will grow if "push" technology takes off, bringing large video and graphics files from the Web to desktops, one user said.

"It doesn't take a stretch to imagine the large impact on storage if something is pushed to you and you don't want to look at it right away, so you store it somewhere," said Eric Haseltine, vice president and chief scientist for creative technology at Walt Disney Imagineering in Glendale, Calif.

Phil Devin, chief storage analyst at Dataquest in San Jose, Calif., said the typical sales presentation, often carried on a laptop computer with graphics-rich presentation programs, has grown from 200K bytes to 200M bytes during the past few years.

GET READY FOR VIDEO MAIL

Several analysts and Haseltine said the advent of successful desktop videoconferencing in office settings is bound to spur video mail. When that happens, information systems departments must be ready for increased storage requirements as users store enormous video-mail files, rather than view them and throw them out, analysts said.

"The price of storage is dropping so fast that people can afford it, so it's becoming easier to save all sorts of files rather than throw them out," said Currie Munce, director of data storage research and advanced technology at IBM's Almaden Storage Research Facility in San Jose.

SIZING UP DIGITAL FILES

Type	Size
40 pages of text	100K bytes
1 hour of digital music	500M bytes
1 hour of digital video	2.2G bytes
1 hour of high-definition video*	6.7G bytes

*Projected

Source: Peripheral Research Corp., Santa Barbara, Calif.

The sheer size of video files can be hard to comprehend, analysts said. An hour of digital video saps 2.2G bytes of space — about 2 million times as much digital space as one hour's reading time of digital text, according to a report by Peripheral Research.

Digital video images gobble up storage in this way: One tiny color pixel, smaller than the size of a period, may take up to four bytes in size; one frame on a high-resolution video screen could be 1M byte; and one second of high-quality digital video contains 30 frames.

That doesn't include the memory needed for digital sound, video running in multiple windows or videos that require interaction, analysts said. □

NEW PRODUCTS

TECMAR TECHNOLOGIES, INC. has announced a 200G-byte, eight-cartridge magazine-based digital audio tape autoloader, the WangDAT 3900 LD8. According to the Longmont, Colo., company, the autoloader uses 4mm digital audio tapes in a 5.25-inch form factor. It costs $4,900.

Tecmar Technologies
(303) 702-7015
www.tecmar.com

PROXIMA CORP. has announced a version of its Lightbook ultraportable notebook projector that supports VGA and Super VGA resolutions.

According to the San Diego company, the 11-pound projector is small enough to fit inside an attache case.

It costs $5,999.

Proxima Corp.
(619) 457-5500



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Smart cards may aid the network PC

CONTINUED FROM PAGE 43

that users carry with them on the job, analysts said.

And although smart-card readers and wide-scale access to network computers for multiple users aren't available, the technology could have many uses, observers and some early users said.

Smart cards would let end users log on to machines quickly and gain access to applications they use — regardless of the machine's location.

The technology also would be useful in areas such as health care and customer service jobs across multiple industries, according to Ira Morrow, an analyst at Gartner Group, Inc. in Stamford, Conn.

Customer service workers, for example, typically access the same few applications repeatedly. Health care workers need access to machines in a variety of locations throughout a hospital and need a secure environment because the data they access is usually private patient information, Morrow said.



ABOUT THE FRAMEWORK

The OpenCard Framework is enabling technology that lets end users download device drivers from the Internet to allow communication with multiple smart-card types.

Smart cards store a cardholder's personal information in a secure, silicon-based chip. After inserting a smart card into a reading device, which can be attached to a network computer or a PC, a personal identification number is used to identify and authenticate the cardholder.

By using a secured connection such as the Internet or a dial-up direct connection to a corporate server, an end user could access applications, electronic mail or other data on the network they now access remotely with a laptop.

But according to Neil MacDonald, an analyst at Gartner, those types of applications for mobile network computer users are probably at least two years away, assuming that network computer appliances will become like public telephones — available at hotels, airports and other destination stopovers.

SMART CARDS ON CAMPUS

Some smart-card technology is already here.

More than 38,000 end users at Florida State University in Tallahassee — students, staff and faculty — have used smart-card technology for several years based on a system the university developed using components from a handful of vendors.

The university recently joined with CyberMark in Columbus, Ohio, to market the university's smart-card system, said Chris Corum, a marketing director at CyberMark who was a program manager at Florida State until two weeks ago.

The university's population uses smart cards for access to library books and student records and will use them to access campus computer labs, Corum said.

"For many students here, the cards are second nature because they've been using them since they arrived," he said.

Cirum said local vendor such as bookstores can download cash electronically from the cards — which students have used at unattended machines that resemble automated teller machines.

Although those students aren't mobile office workers, some of their needs are the same; both groups need to access information and conduct transactions in a secure way.

"[Students] will carry the [smart-card] concept with them as they enter the workplace," Corum said. He said CyberMark and the university are just steps away from providing students online access to the types of applications they need — and will offer it to them as soon as a firewall is completed and scripting is done for applications. □

SYSTEMS INTEGRATION

R/3 finds a home with NCR, DG

By Randy Weston

SAP AG's R/3 software system is getting a prefabricated home on NCR Corp. and Data General Corp.'s servers.

NCR and DG recently made separate integration deals intended to strengthen R/3's reliability on clustered Windows NT servers.

Dayton, Ohio-based NCR is working with SAP to integrate R/3 with NCR's LifeKeeper middleware and Informix Software, Inc.'s OnLine Dynamic Server database on NCR's WorldMark server platform running Windows NT.

An NCR spokesman said the company also is testing a package for Oracle Corp.'s database server.

DG, in Westboro, Mass., is releasing a prepackaged cluster system designed for R/3. It includes DG's low-end Aviion servers, a fault-tolerant Clariion RAID storage system and the NTAlert automated problem detection system with Veritas Software Corp.'s fail-over software FirstWatch for NT.

Henry Morris, an analyst at International Data Corp. in Framingham, Mass., said companies "are increasingly relying on applications like R/3 to run businesses," and "system availability is becoming a critical issue."

He said the key component of the NCR and DG systems is the fail-over software. It is used to switch from a failing server to a working one to keep the R/3 applications from going down because NT isn't as robust as Unix.

Those systems are meant to protect companies from unplanned downtime, but Morris said users also need to plan for scheduled downtime, such as when upgrading the R/3 software.

"SAP requires you take the system down for up to 10 hours or more," Morris said. "Organizations need some overall plan for high availability at the time they are making their R/3 purchase or when they are making their re-engineering plans around the system."

Such plans include developing a policy for handling the downtime, such as doing the work only on weekends or developing a backup system for mission-critical applications within R/3. □

NT CLUSTERING PACKAGES FOR R/3

Company	Product	Prices
NCR	Two WorldMark 4300 servers [illegible] running Informix or Oracle database software, LifeKeeper middleware and [illegible] NetWare	Starts at $300,000
Data General	Two Aviion 200-MHz Pentium-based Aviion servers, Clariion disk arrays, NTAlert and FirstWatch	Starts at $75,000

Microsoft upgrades Windows CE operating system

CONTINUED FROM PAGE 43

dors said the Windows CE devices are selling briskly. But hard numbers on Windows CE sales haven't been released yet.

Stephen McCallister, information systems manager at Planned Parenthood of Western Washington in Seattle, is testing Casio Computer Co.'s Cassiopeia and Compaq Computer Corp.'s PC Companion.

"I really like the size," McCallister said. "[They fit] right in my coat pocket. And as a keyboard junkie, I like the little keyboards."

But even as industry observers predicted that the Windows CE devices and electronic organizers such as U.S. Robotics Corp.'s PalmPilot will wake up the moribund PDA market, they also said IS managers are becoming more concerned about support issues.

"The vendors and software developers need to be aware that IS is worried about remotely managing these systems," said Diana Hwang, an analyst at International Data Corp. in Framingham, Mass.

Hwang said there are few corporate rollouts of Windows CE handhelds or PDAs. Rather, individual users are buying the systems and using them to receive and send electronic mail and maintain client lists.

SECURITY ISSUES

That unpredictable purchasing pattern brings up security issues, industry observers said.

Leslie Fiering, an analyst at Gartner Group, Inc. in Stamford, Conn., said data and hardware security issues are even more important with PDAs than with laptops.

"With the palmtops, they are much easier to lose or leave behind," Fiering said. "And if the user buys the device himself, then who owns the data? The power of these palmtops has reached the point where a salesperson can keep their entire contact list on them."

International Data Corp. in Framingham, Mass., predicts 300,000 Windows CE devices will sell this year.

In the meantime, vendors are planning the following steps to aid IS in supporting the systems:

- U.S. Robotics is developing support tools for PalmPilot, including updating its Palm operating system to let developers create applications using Microsoft's Visual C++. Recently, U.S. Robotics offered TCP/IP support and the ability to remotely synchronize data via the Internet or LANs.
- Compaq plans to extend its Intelligent Manageability software to its Windows CE device, the PC Companion. That will let IS managers track a device's software by creating a special set of agents.
- Puma Technology, Inc. in San Jose, Calif., last week announced it is offering data synchronization with its Intellisync software and Symantec Corp.'s ACT contact management software for PalmPilot and Windows CE devices. □



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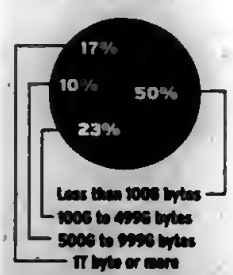
Software

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Briefs

HOUSE BUILDERS

How much data do you expect to store in your data warehouse in the next 18 months?



Base: 1,000 attendees surveyed at Digital Consulting, Inc.'s Data Warehouse Conference in February

Source: Meta Group, Inc., Standard, Conn.

Sears Canada catalogs gains

By Craig Stedman

WHEN SEARS, Roebuck and Co. threw in the towel on its faltering catalog business five years ago, its Canadian affiliate didn't have the same luxury, despite similar revenue declines and losses.

Two-thirds of Sears Canada, Inc.'s customers still make some or all of their purchases through its catalogs, rendering a mail-order phaseout unpalatable in the Great White North. But the Canadian Sears was being pummeled by the same competition from discount retailers and specialty catalogs that killed the U.S. operation. And its mainframe-based catalog marketing system was straight out of the retailing Stone Age.

Customers who didn't buy anything for a year were excised from Sears Canada's database. The company's marketers couldn't find out what people bought from its different catalogs. A query on sales of Levi's jeans had to be set up to collect data going forward, rather than to provide an instant look at recent history.

"It was like a black box that we couldn't see into," said Fred Hagerman, customer list manager at Sears Canada's catalog division in Toronto. That contributed to an annual routine of losses and reductions in catalog revenue and active customers, he added.



Catalogs can now be targeted at customers "who weren't shopping with us anymore. Before, we would have just kept ignoring them."

The catalog unit started trying to dig out of the snowbank last June. It did a merchandising makeover to widen selection and lower pricing. And it flipped the switch on a Unix-based customer analysis system that is meant to match the sophisticated technology used by U.S.-

Sears Canada, page 52

IBM succumbs to millennium mania

▸ *Year 2000 package aimed at mainframe fixes*

By Sharon Gaudin

IBM IS THROWING its hat into the year 2000 ring, but some users say they may not want the help.

IBM will release a package of tools and services this month to help its many users tackle the year 2000 problem on their mainframes. This package, named Visual Age for the Year 2000, includes a Visual Age for Cobol tool, code analyzer tools from third-party vendors and support services.

The tools, which could be used individually for other projects, are meant to work together on year 2000 projects. Used together, the tools are designed to search through an application to automatically find and fix errant Cobol code in mainframe applications. IBM executives said the company is developing a separate tool for C and C++ applications.

But Kalman Shor, assistant director of MIS at Michael Anthony Jewelers in New York, said he doesn't trust an automated tool. He wants his programmers to actually get their hands on the code and fix it themselves.

IBM, page 52

- Visual Age for Cobol Version 1.2 for OS/2 Professional Edition for Workstations
- Isogen's SoftAudit/2000 and SoftAudit/UNIX package, which analyzes the code
- Edge Software's Portfolio Analyzer
- Support services

FRANKLY SPEAKING

Fine-tuning is too costly

FRANK HAYES

TEN NELSON, the man who invented hypertext, used to ask groups of programmers, "How many of you prefer to drive a stick shift?" As most of the hands in the room went up, Nelson would say, "None of you should be designing user interfaces."



His point was that stick-shift users are willing to do extra work so they'll have finer control and maybe get a little more efficiency out of their machines. Lots of programmers have that fine-tuning obsession, which can make life miserable for users who don't care about a million options but just want to get the job done.

Today, maybe those programmers in Nelson's audiences shouldn't be designing anything at all.

It's ugly but true: Corporate IS shops can no longer afford stick-shift programmers. We can't afford coders who want to optimize tight loops, make calls to assembly-language routines and take advantage of undocumented features.

In other words, we can no longer afford to do the stuff that's really fun.

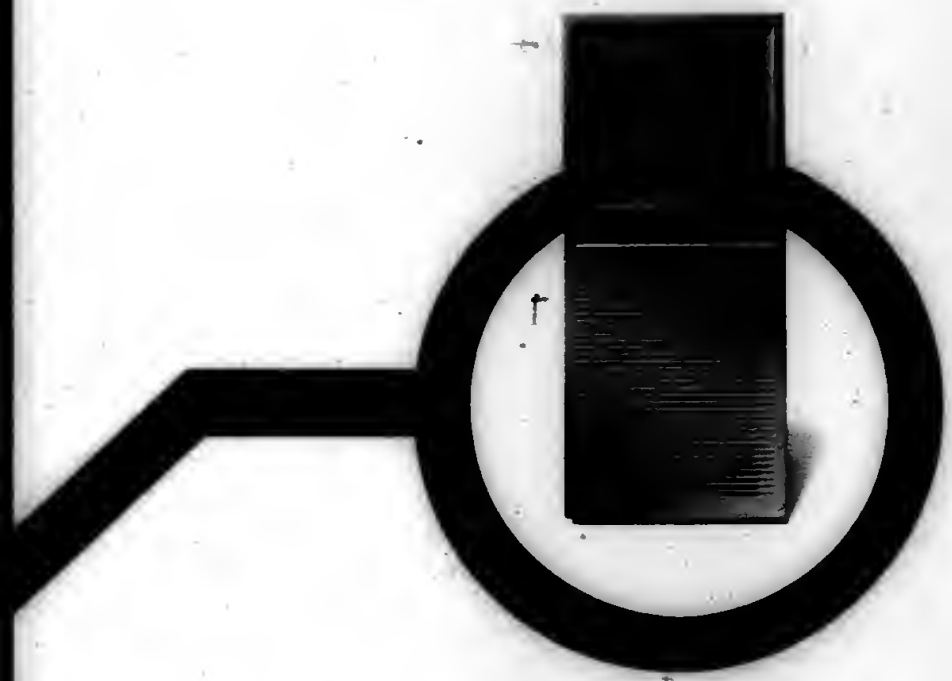
Make no mistake: I *like* assembly language, along with everything else in the codesmith's bag of tricks. A computer is the best electric train set in the world, and I've never gotten tired of making all the bells and whistles work.

But IS shops today just plain can't afford that anymore.

We can't afford it because hardware has become too cheap, and technology is changing too fast, and the backlog has gotten too big to make clever coding worthwhile. It's faster and cheaper to upgrade hardware than to devise and maintain

Hayes, page 52

Open 24 hours.



Unfortunately, it is not always what you can expect. That's why more and more organizations, both large and small, are choosing scalable, dependable Standard High Volume (SHV) servers based on Intel architecture processors like the Pentium® Pro processor.

SHV servers span entry-level through mid-range applications, including a broad base of commercial, off-the-shelf software based on Windows NT* and UnixWare*. These systems give you the performance headroom you need today, and the ability to scale that performance as your business needs grow. And they're available from many quality systems suppliers.

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32-bit applications gain ground

By Kristi Essick

PC USERS last year bought $10 billion worth of application software in the U.S. and Canada — an 8.3% increase from 1995 figures, according to new research released by the Software Publishers Association (SPA).

After a slip in the third quarter last year, application software sales were up to $3.4 billion in the fourth quarter, 28% more than the similar period in 1995.

SOFTWARE MARKET

Unit sales of packaged software increased 27% in North America last year and were up 42% in the fourth quarter last year, compared with the similar period in 1995.

MICROSOFT, OF COURSE

Microsoft Corp. Windows-based applications accounted for 81% of the application software sold in the U.S. and Canada last year, with sales of $8.5 billion — an increase of 16.3% from the previous year.

The SPA forecasts that sales of 32-bit applications will surpass 16-bit sales by the middle of next year, according to the report. In the fourth quarter last year, 32-bit Windows applications accounted for 48% of Windows application sales: 16-bit applications accounted for 52%.

Things weren't as rosy for Macintosh-based application sales, which last year fell 23%, to $1.2 billion, compared with 1995 figures.

On the whole, Macintosh sales represented just 11% of the application software market last year, the report said. And fourth-quarter Macintosh application shipments fell 30%, to $333.6 million, compared with the similar period in 1995.

DOS applications continued to dive, with last year's sales falling 46.4%, to $558 million. In the year's final quarter, DOS sales declined 60%, to $118 million, from 1995's fourth quarter.

The applications that showed the strongest growth last year were electronic-mail products and Internet development tools, according to the SPA.

Collectively known as "other productivity" applications, this group grew 42.9% last year compared with 1995, selling $2.3 billion worth of products.

Database software sales also saw healthy growth of 27.7% last year, with Macintosh database applications growing much faster than Windows-based databases, the only category in which Macintosh beat Windows.

Macintosh database sales grew 65.5%, and Windows database sales grew 26.9%. The 46.3% drop in DOS database sales caused the overall figure to fall to 27.7%.

Software applications that saw a decrease in sales last year include drawing and painting applications, which fell 25.6%, to $343 million, and other graphics software, which fell 12.3%, to $275 million.

DISAPPEARING DOS

But sales of presentation graphics software grew 18.6% last year. Sales of word processing software fell 10%, to $976 million. Macintosh word processors experienced a 31.7% drop in sales, and DOS word processors nearly disappeared after sales fell off 91.8%.

The SPA, which is based in Washington, is an industry group that represents 1,200 software companies worldwide. □

Essick writes for the IDG News Service in London.

IBM addresses 2000

CONTINUED FROM PAGE 49

"These tools just aren't practical," Shor said.

He said he has been briefed on the tool package but won't be buying it. "Say you get an 80% hit with an automated tool, you still have 20% to do by hand. No automated tool will give you 100%," Shor said.

He also said it takes as much or more time to clean up that 20% than it would to do it all manually.

"It takes a lot of time to examine what the tool did do and then go through the code to find that 20%. It's better to go through it by brute force. It's cheaper for us to rent programmers to handle this," he noted.

The year 2000 problem results from computer applications that recognize only the last two digits of the year in date structures.

That will cause crashes and other problems in date-sensitive applications at the turn of the millennium.

To avoid the problem, corporate IS managers have been searching for the easiest way to tackle what often is a gargantuan problem. And vendors have been quick to jump in to what could be a lucrative market — solving this problem.

The information systems manager at one of the country's largest banks said his company has been weighing the problem for the past year, and he's not convinced that s tool is the answer.

SEE ME IN 2999

"None of these vendors really know how to handle this because we've never gone through it before," said the IS manager, who asked to go unnamed. "Let them come to me right before the year 3000 and tell me how they fixed the year 2000. Then I'll look at their tools."

The manager said he shares Shor's concerns about automated tools. "I'm more comfortable when someone actually looks at the code," he said. "That's my data they're messing around with."

The tools in IBM's Visual Age for the Year 2000 package will be available in April.

Visual Age for Cobol 1.2 for OS/2 Professional Edition for Workstations has s list price of $1,899. The host costs $3,500.

Isogon Corp.'s SoftAudit/2000 and SoftAudit/ONE package, which analyzes the code, is listed at $27,900.

Also part of the package, Edge Software's Portfolio Analyzer for the host costs $19,000. □

Hayes

CONTINUED FROM PAGE 49

clever hacks to the code.

We also can't afford it because those clever programming tricks are costing us — a lot.

For example, the year 2000 problem was caused by s clever hack: using just the last two digits of the year. At the time, it saved some expensive storage space and processing time. But today, storage and CPU time are cheap — and fixing the year 2000 problem will cost a trillion dollars.

NIGHTMARE CODE

IS shops across the country have plenty of legacy mainframe applications that have been patched, spliced or adjusted with clever hacks that also served to make them maintenance nightmares. Even more recent programs built with Visual Basic and PowerBuilder use tricks and undocumented features that mean they can't make the jump when Microsoft or Sybase upgrades the development environment.

We can't afford to keep digging ourselves into this hole. It's time to let go of that stick shift.

Developers have to start being more than just coders. That means using visual tools that automatically generate code, and — don't touch! hands off! — not hand-optimizing the code once it's generated.

Project managers have to start investing in those tools and making sure developers spend their time solving business problems and making easy-to-use interfaces, not tweaking tight loops.

And IS executives have to start budgeting money for that bargain-priced hardware to get big performance improvements, instead of hoping that clever programming tricks will squeeze out a little more speed.

Will those new tools make working in corporate IS less fun?

Maybe, but the alternative is having competitors eat your lunch because your IS shop has become a cost center instead of s competitive edge.

Either you quit shifting gears by hand today, or tomorrow you may not have anything to shift with. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

Sears Canada catalogs gains

CONTINUED FROM PAGE 49

based clothing catalogs and retailers such as Wal-Mart Stores, Inc. in Bentonville, Ark.

The new system, called Prophet, combines IBM's RS/6000 Unix server and DB2 database with custom-built catalog management software and Archer, a retail analysis tool made by Retail Target Marketing Systems, Inc. in Waukesha, Wis.

BETTER TRACKING

End users can analyze sales data summarized in DB2 with Archer and then import the results into spreadsheets to predict and track catalog performance. Data from 1994 to the present is now available, and the company plans to keep five years' worth of transactions on hand for analysis.

Now, Sears Canada "can start to query deeper into customer behavior," which allows more targeted catalog mailings aimed st reducing costs and maximizing profits, Hagerman said.

It also can identify customers who are wavering in their purchases and put together marketing campaigns to keep them in the fold.

Sears Canada and other old-line Canadian retailers face the same competitive pressures as their U.S. counterparts, said Richard Talbot, managing director at Thomas Consultants International, Inc. in Toronto.

The top three Canadian retailers' share of retail sales eroded from 70% to 50% in recent years, due largely to incursions by Wal-Mart, he said. One of the three, Eaton's, was forced to seek bankruptcy protection in March.

One shortcoming is that old-line retailers and catalog merchants typically have been "shooting in the dark with s shotgun approach" on marketing, Talbot said.

Now, companies are scrambling to catch up with their more technology-savvy rivals, he added.

Sears Canada was losing 5% of its catalog customer base each year, even when it purchased external mailing lists to target new buyers, said Bruce Clarkson, national manager of customer development st the catalog division.

Since last June, that has turned around and is projected to grow 5% this year.

Sears Canada said its catalog business accounted for more than 10% of last year's revenue of $4 billion ($2.9 billion U.S.).

A women's clothing catalog that was sent to lapsed buyers in January is expected to turn a profit, and similar mailings are planned for other products this summer. Sears Canada hopes total catalog merchandise sales will return to the black this year, Clarkson said. □

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through future technological changes and upgrades without additional licensing fees. LAWSON INSIGHT. *Because the future can't wait.*

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Even the best anti-virus still leaves you vulnerable to attack. Last year nearly two-thirds of all companies reported losses of $50,000 or more from security breaches. Eighteen percent had losses of one million dollars or more.

It's a big problem, especially since desktop threats are as varied as they are expensive. Over 200 new viruses appear each month. Outside hackers are becoming more skilled at gaining access. According to the FBI, your own employees are responsible for 50% of all network intrusions. And disasters such as system crashes are completely unpredictable.

But now you can protect against all desktop threats with the new McAfee *Desktop Security Suite*—the first desktop security solution to give you total protection in one suite.



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Only McAfee, the leader in network security and management, brings together top-rated, "best-of-breed" solutions for complete desktop protection.

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Desktop firewall transparently guards against unauthorized access—like open modem lines that are a backdoor to your net.

And backup automatically backs up files to any Iomega Zip,™ Jaz™ or tape drive. To restore files, simply drag-and-drop.



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If you already own *VirusScan*, great. If not, get it immediately—with 100% virus detection, it's the best protection you can buy. And when you're ready to upgrade to *Desktop Security Suite*, we'll give our corporate customers 50% off the list price.

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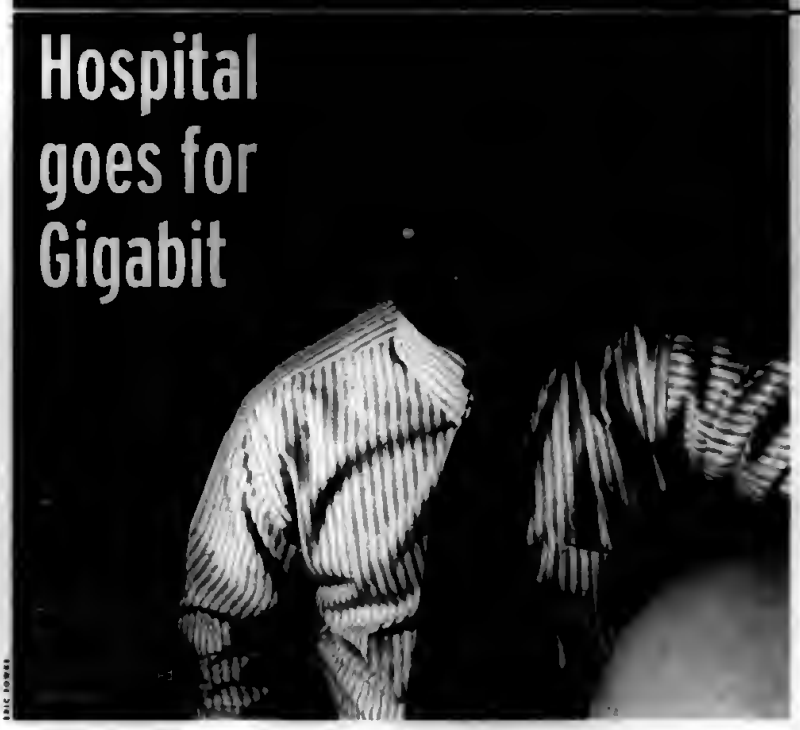
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The Enterprise Network

LANs • WANs • Network Management

Briefs

Hospital goes for Gigabit



ERIC LOWES

▸ CIO says Gigabit Ethernet safe, robust

By Bob Wallace
LOWELL, MASS.

EDWARD BIANCO determined that without a move to Gigabit Ethernet technology, Lowell General Hospital's LAN infrastructure would need serious medical help.

He isn't a doctor, but it didn't take the seasoned information technology executive long to diagnose that the weight of projects under way would crush the 200-bed hospital's network.

The busy information systems staff at Lowell General is rolling out a variety of medical imaging and desktop video applications and is completing an intranet fed by a fast-expanding object-enabled data warehouse.

"We have to use new technologies to facilitate the patient care process," said Bianco, chief information officer at Lowell General in Lowell, Mass. "But we must do so in a prudent way

Gigabit Ethernet, page 56

Tools aim at Windows migration

By Patrick Dryden

MANAGEMENT SOFTWARE vendors last week offered new tools designed to help users migrate thousands of networked PCs to the latest Microsoft Corp. operating systems.

Intel Corp. and newcomer MainControl, Inc. seek to reduce the labor, expertise and time needed to upgrade PCs to Windows 95 and Windows NT.

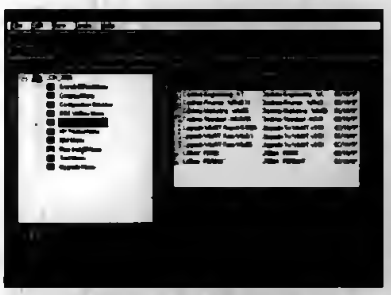
Both introduced distribution and scripting tools that automate much of the tedious process of installing a new operating system, resulting in lower overall cost and fewer problems, according to beta testers.

"We can't synchronize the manual labor required to upgrade 10,000 desktops to Windows NT in the next five months," said Norbert Bueker, chief information officer at Bayerische Vereinsbank in Munich, Germany.

Instead of sending technicians to every desktop first for inventory and again for installation, the bank plans to save steps by using MC/EMpower from MainControl in Vienna, Va.

Centralized technicians will use inventory software to gather

Installation tools, page 56



Intel's LANDesk Configuration Manager can automate many steps required to install or update Windows across a LAN

GroupWise users on the fence over Novonyx

By Barb Cole-Gomolski

GROUPWISE USERS have mixed feelings about Novell, Inc.'s plans to form a separate company with Netscape Communications Corp. that will work to integrate Novell technology with Netscape's Internet servers.

Some said the effort will allow them to blend Internet hooks more quickly with their existing messaging networks. Others fear the effort could lead Novell to hand off some development to the new venture, which will be called Novonyx.

Truman Harsha is team leader of the network operations group at the U.S. Department of Agriculture in Fort Collins, Colo., which has several thousand GroupWise users. He said the move is somewhat troubling because, on the surface, it appears that Novonyx will have a role in the future development of GroupWise. Harsha said he doesn't want to see development or technical support for GroupWise taken out of Novell's hands because he likes the develop-

GroupWise, page 56



Snapshot

SIGN IN, PLEASE

Worldwide market share estimates for remote access systems

Access routers	55%	40%
Access servers	25%	17%
Access concentrators	20%	43%

Source: Dataquest, San Jose, Calif.

Installation tools

CONTINUED FROM PAGE 55

information about each PC via the network. Then they will create one file that models responses for installation at each PC.

Despite vendor claims that this process can be fully automated, Bueker said the bank will separate the distribution and installation steps.

MC/EMpower can distribute small application upgrades automatically, Bueker said. But technicians will carry the operating system upgrade data to each LAN server for local delivery, because "you can blow up your network by sending too much data across it," he said.

PORTABILITY

To avoid overloading a campus or wide-area network, Intel designed its LANDesk Configuration Manager as a portable server that technicians can move from one LAN to another during a migration.

Even so, LANDesk Configuration Manager reduces the number of staffers and time required and improves configuration quality through its scripting, according to Greg Shadoan, a network engineer at integrator ICI Computer Services, Inc. in Wilsonville, Ore.

Shadoan said one day spent with LANDesk Configuration Manager can save him a week of work when he reconfigures training LANs with 100 PCs.

A savvy information technology organization can benefit from such tools, even if automated software distribution isn't completely reliable, according to Brian Murphy, a senior analyst at The Yankee Group in Boston.

"Maybe 200 out of 5,000 PCs will still require manual intervention," Murphy said. "It's very difficult for central IT to scope out and deal with all the changes that users can make at their stations."

The downside of MC/EMpower is the risk of investing in a complex suite of inventory and distribution tools, said Alison Palmer, research analyst at Hurwitz Group, Inc. in Newton, Mass.

"We need to hear that operating system distribution tools actually worked for someone migrating a lot of stations," Palmer said.

MainControl provides six desktop management functions in MC/EMpower, including modules that track changes and provide links to accounting systems.

Pricing ranges from $20 to $150 per station, according to the modules selected.

Intel includes the inventory function from its LANDesk Management Suite with the configuration server and scripting system, so users won't require its tool kit. LANDesk Configuration Manager costs $10,000. □

Gigabit Ethernet

CONTINUED FROM PAGE 55

to make us competitive with the larger hospitals in downtown Boston." Lowell is roughly 30 miles northwest of the Bay State's hospital mecca.

One key project involves putting all hospital policies and procedures on Lowell General's intranet.

"This will eventually let all units of the hospital have screen access to this critical information rather than having people flip through page after page in manual after manual," said Linda Elliott, nursing information systems coordinator at Lowell General. "There will be a tremendous reduction in paper, which will streamline the patient care process. This is one huge benefit that we're all looking forward to."

LAN TECHNOLOGY

TOO TAXING

Bianco's concern is that the intranet and many other projects would be too taxing on the hospital's existing 100M bit/sec. Fast Ethernet fiber campus backbone. His options are to move to semimature Asynchronous Transfer Mode (ATM), which scales from 155M to 622M bit/sec., or to fledgling Gigabit Ethernet technology, which runs at 1G bit/sec.

Analysts said Gigabit Ethernet may cost slightly more than ATM, but it is difficult to put a price tag on the cost of retraining a networking staff to support a "new" technology such as ATM.

"ATM has been around longer than Gigabit Ethernet, but ATM [specifications] are still all over the place," Bianco said. "Ethernet technology is much safer and far more robust than ATM." Bianco's decision came down to his feeling more comfortable with Ethernet-based technology.

The CIO said he is aware that Gigabit Ethernet standards aren't likely to be set until mid-1998, but he said the hospital could implement the technology in six months anyway. "Every major vendor has a huge vested interest in Ethernet technology and will therefore make sure there's a solid standard that works," Bianco said. "Sure, individual vendors will have proprietary twists, but interoperability will be the goal."

The hospital is considering adding Cabletron Systems, Inc. Gigabit Ethernet modules to its Cabletron MMAC-Plus backbone switches.

With the many ongoing projects at Lowell General — chief of which is integrating hospital information systems — Bianco said the hospital didn't want to implement a different backbone technology. "We're migrating everything we can to NT and are having a hard time just recruiting people with strong NT experience. Installation time is a critical issue, and we decided it'd be a quicker and simpler cutover to Gigabit Ethernet than to ATM."

Lowell General's planned move to Gigabit Ethernet could mark a trend in the way the health care industry views advanced LAN technologies.

BANDWIDTH HUNGER

"There's a lot of old technology being used in the health care industry, but that has to change as hospitals deploy some of the industry's most bandwidth-intensive applications, including medical imaging, teleradiology and desktop video," said Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J. "Hospitals want to eventually extend computer systems to the bedside, although that can't be done without a robust network infrastructure." □

GroupWise users

CONTINUED FROM PAGE 55

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But Jim Shaw, senior account manager at Compnet Services, Inc., a systems integrator in Burbank, Calif., disagreed. "The result [of Novonyx] will be the SuiteSpot servers on IntranetWare, which is neat," Shaw said. The Novonyx work could also boost GroupWise with support for Netscape-supported protocols, including Internet Message Access Protocol and Network News Transport Protocol (NNTP), Shaw added.

Novell announced plans last month to set up the privately held company with Netscape, but details are still sketchy. Novell officials said Novonyx will be in the Provo, Utah, area and will operate independently from its parent companies.

SUITE MOVE

The new company's primary charter is to port Netscape's SuiteSpot family of Internet servers to Novell's IntranetWare. Netscape's servers currently run on Microsoft Corp. Windows NT and Unix.

At the same time, Novell will provide the spin-off with the right to resell GroupWise and Novell Directory Services (NDS), which the company will integrate with Netscape's offerings. Down the road, Novonyx could integrate GroupWise with components of SuiteSpot for IntranetWare or license pieces of GroupWise to use within its own products, according to Eldon Greenwood, director of product management at Novell's applications division.

"The more GroupWise is integrated with Internet applications, the better it will be," said Ken Amge, information systems manager at KTVX-TV in Salt Lake City, a GroupWise shop.

Analysts were quick to point out, however, that Novell appears to be risking losing GroupWise sales for the sake of its flagship NetWare. Once SuiteSpot for IntranetWare is available, Novell will no longer be able to position GroupWise as the only groupware system with ties to NDS.

"This could be a case of conceding the groupware sale in order to get the NetWare sale," said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass. □

SHORT

Web-enabled server monitor

Symantec Corp. recently upgraded its Expose server manager to ease access via the World Wide Web and support Windows NT-based Web servers. Expose 4.0, which costs $695 per server, provides a console that can monitor diverse network operating system domains. It lets managers check those servers from a browser by using prepared or customized reporting parameters. In addition to watching the Windows NT system supporting a Web server, Expose 4.0 can track the number of hits, bytes transferred and current connections.

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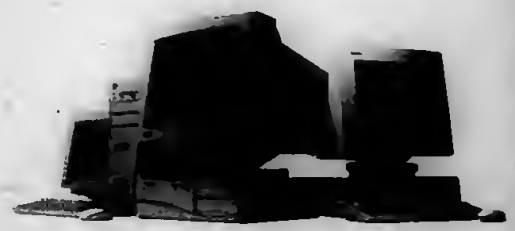
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NEW PRODUCTS

BLUEWATER SYSTEMS, INC. has announced Version 2.0 of WinDK, a device driver development kit that has a new device driver wizard. According to the Edmonds, Wash., company, the wizard can create hundreds of lines of driver code from specifications. It was designed for Windows NT with Microsoft's Visual C++.

Pricing starts at $595.

Bluewater Systems
(206) 771-3610
www.bluewatersystems.com

JAYCOR NETWORKS, INC. has announced a Peripheral Component Interconnect (PCI) plug-and-play Fibre Channel adapter to its FireStart family of Fibre Channel cards and hubs.

According to the San Diego company, Windows NT and Solaris x86-based platforms with PCI bus compatibility can use Fibre Channel technology for faster transmission over wider distances. Adapters start at 1063M bit/sec. ability with copper interface and include a 266M bit/sec. ability with an optical interface module.

Pricing starts at $1,995.

Jaycor Networks
(619) 535-3121
www.jacor.com

MICRO NETWORKS CORP. has announced MN5920 and MN5921, 8-bit, 150-MHz flash analog-to-digital converters for industrial and commercial systems.

According to the Worcester, Mass., company, the converters can be used in applications that include video digitizing.

Pricing starts at $72 each in quantities of 100.

Micro Networks
(508) 852-5400
www.mnc.com

MERIDIAN DATA, INC. has announced plug-and-play CD NetROM Remote and CD Net Remote, software for configuring Novell, Inc. NetWare networks that use CD-ROMs.

According to the Scotts Valley, Calif., company, both products connect directly to Ethernet 10Base-T networks. They were designed to eliminate the process of having to shut down the NetWare file server to add expansion boards.

Pricing starts at $4,835.

Meridian Data
(408) 438-3100
www.meridian-data.com

ABSTRACTION SOFTWARE has announced Prophesy Version 3, a Windows-based network and workflow visual simulation system for simulating computer networks and workflow systems.

According to the Highlands Ranch, Colo., company, Version 3 adds Prophesy Express, an interface that acts as a wizard to enable fast model construction. It lets users play "What if?" scenarios to answer questions that network designers face.

Prophesy Version 3 costs $599.

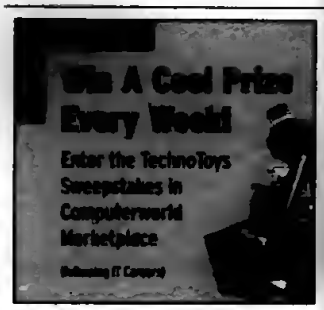
Abstraction Software
(303) 791-6600
www.abstraction.com

PROFORMA CORP. has announced ProVision Workbench Version 2.2, with a new Internet/intranet tool to add business process re-engineering to the World Wide Web.

According to the Southfield, Mich., company, the software allows companies to model business processes and design them for cost-effectiveness.

Pricing starts at $1,695.

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Spreading knowledge

▸ *Intranet puts all of Arthur Andersen's know-how in hands of consultants at client sites*

By Justin Hibbard

ARTHUR ANDERSEN & CO. is sending each of its consultants out to customer sites armed with a 35,000-page three-ring binder called an intranet.

At least that's what managers at the Chicago-based professional services firm had in mind last year when they decided to move the company's entire body of knowledge to an intranet called KnowledgeSpace, now available to employees worldwide.

During the past year, Andersen has taken CD-ROM-based content from each of its major businesses — which specialize in business practices, information technology, accounting and vertical industries — and ported the material to the new system.



Firm standardized on Microsoft intranet products to leverage Visual Basic skills

Using KnowledgeSpace, individual consultants can bring the company's collective knowledge to bear on their clients' business problems.

For instance, Mark D'Arcy, a manager in Andersen's Business Consulting group, recently visited a Northwestern company that needed help controlling its growth. Using the client's Internet connection, D'Arcy accessed KnowledgeSpace and quickly found answers — not on pages posted by his business unit, but on pages posted by Andersen's Global Best Practices group.

The client was impressed.

"They could see the value of the company as opposed to the value of the individual," D'Arcy said.

KEEPING UP

Leveraging corporate knowledge through an intranet has become a matter of staying competitive in the professional services industry. KPMG Peat Marwick, Coopers & Lybrand and Booz Allen & Hamilton, Inc., all in New York, launched major initiatives last year to put browsers on every desktop and move corporate knowledge into databases connected to web servers.

Such projects aren't trivial, however. Andersen spent about $1 million and eight months designing and building its system, including three months spent porting more than 35,000 pages of content from CD-ROM to the intranet. The intranet has become so integral to the company's strategy that Andersen isn't counting pennies to justify the intranet's cost.

"It's an investment, not a cost," said Sue Leandri, operations manager at Andersen's

Andersen, page 64

Briefs

Computer intrusion reports received each year by the Computer Emergency Response Team (CERT) at Carnegie Mellon University's Software Engineering Institute since it was founded in November 1988:

[redacted]

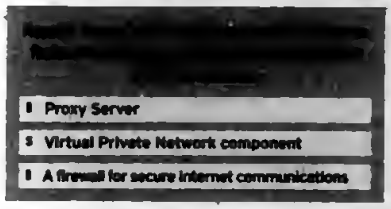
BRAINSHARE '97

Novell takes wraps off new Internet packages

By Laura DiDio
SALT LAKE CITY

NOVELL, INC. showcased its forthcoming Proxy Cache and Border Services offerings at its recent Brainshare '97 developer's conference here. The technologies were designed to give businesses a set of secure, managed intranet and Internet capabilities.

Novell hopes its new technologies and the Internet vision of new CEO Eric Schmidt will help it make the transition from being a network operating systems vendor to being a network services company.



NOT SO HOT

Until now, user response to Novell's Internet and intranet initiatives has been tepid at best, said Jamie Lewis, president nf The Burton Group, Inc., a consultancy here.

The Proxy Cache technology was designed to increase the throughput and performance of Novell's IntranetWare servers by storing frequently used World Wide Web pages or other documents so the proxy server can answer requests without having to download pages from the Internet.

The Border Services Suite provides Internet access to IntranetWare networks that use firewalls and existing IntranetWare security.

Mike Hicks, a systems engineer for the city of Tucson, Ariz., said the Novell package suits him fine. Tucson is upgrading its 300 NetWare servers to IntranetWare 4.11, and Hicks said he can't wait to get Border Services. "From what we've seen, they will give us the ability to secure our networks and provide a high level of services to our end users," Hicks said.

WAIT AND SEE

But Mike Crowley, vice president and chief information officer at Rich Products Corp. in Buffalo, N.Y., said his company is waiting to see how fast and how good Proxy Cache and Border Services are before it commits to any IntranetWare upgrades.

"Novell has been getting its act together to a certain degree," Crowley said. "But right now, Novell and 100 other companies are all telling us how they're going to make us more Internet- and intranet-enabled and geared for electronic commerce. We won't really know who to believe until we do detailed internal product testing."

Border Services is a suite of Novell Directory Services-

Novell, page 64

Providers slowly picking up on 56K bit/sec. modems

By Mitch Wagner

INTERNET SERVICE providers are slowly but surely signing up to support 56K bit/sec. modems, but they are waiting until modem vendors sort out their standards wars before aggressively deploying the fast modems.

Three of the nation's largest Internet service providers and online services already have deployed 56K bit/sec. modems from U.S. Robotics Corp. in Skokie, Ill. Another provider expects to deploy the modems this month, and one more will deploy the technology in May.

CAUTIOUS APPROACH

Almost all the largest Internet service providers in the country plan to have some type of 56K bit/sec. modems deployed by year's end, according to interviews conducted by *Computerworld*.

But many are taking a wait-and-see approach on the tech-

Internet providers, page 64

Arthur Andersen delivers better service via intranet

CONTINUED FROM PAGE 63

Global Best Practices unit.

Nevertheless, the savings gained from the system are clear.

For D'Arcy, obtaining the same information for his client using Andersen's previous system would have meant dialing in to several Andersen servers, calling other consultants and waiting days for packages to arrive via courier.

Using KnowledgeSpace, he had same-day access to information posted by other consultants worldwide.

DIFFERENT SYSTEM

When the company distributed information primarily on CD-ROM, the production process required several stages of formatting, much like book publishing.

Now the company stores documents in a SQL Server database, which dynamically builds pages in response to user queries using the Active Server Pages feature of Microsoft Corp.'s Internet Information Server.

IS staffers known as knowledge workers collect documents from all over the company and add metadata to classify the documents and make them searchable. Then they use a custom Visual Basic application to load the documents in the database.

Mark White, head of knowledge systems and network development at Andersen, said the company selected Microsoft technology to leverage its installed base of Microsoft software and the Visual Basic skills of Andersen's developers.

"They've got a collaborative and publishing hybrid," said Mike Gotta, an analyst at Meta Group, Inc. in Stamford, Conn. "They use Lotus Notes to capture all the content and then use Active Server to dynamically assemble all the parts."

Other products for database publishing include LiveWire from Netscape Communications Corp. in Mountain View, Calif., and Cold Fusion from Allaire Corp. in Cambridge, Mass. Both products link web servers to databases. □

Internet providers slowly picking up on 56K bit/sec. modems

CONTINUED FROM PAGE 63

nology, while a standards conflict plays out between U.S. Robotics and the alliance of Lucent Technologies, Inc., Motorola, Inc. and Rockwell Semiconductor Systems

The Internet service providers have announced the following:

- America Online, Inc. in Vienna, Va., is testing U.S. Robotics technology in New York, Washington, San Francisco, Chicago and Skokie. Further deployment will depend on the results of those tests. America Online officials wouldn't say how many users are involved or how long the tests will run.

- AT&T Corp. in New York has no plans for the 56K bit/sec. modems. An AT&T spokesperson said because of the spotty quality of local telephone lines, the company doesn't believe 56K bit/sec. throughput is possible, even with faster modems.

- BBN Planet in Cambridge, Mass., has no specific plans for deployment, but it is testing modems in-house.

- CompuServe, Inc. in Columbus, Ohio, has deployed U.S. Robotics modems on its toll-free access numbers. It won't deploy modems generally until vendors agree on an industry standard.

- Washington-based MCI Communications Corp. is testing U.S. Robotics modems. The company expects to deploy them nationally by midsummer. It will support the competing modem specification when those modems are available.

- Mindspring Enterprises, Inc. in Atlanta has deployed U.S. Robotics modems at five points of presence: Atlanta and the Florida cities of Miami, Orlando, Tampa and Fort Lauderdale. A spokesperson said the company expects to have the modem deployed by June at 40 points of presence, including points in Georgia, North Carolina and South Carolina.

Beyond those areas, Mindspring relies on PSInet, Inc. in Herndon, Va., for its national network. PSInet is testing the modems but has no immediate plans to deploy 56K bit/sec. modems generally.

- Netcom On-Line Communication Services, Inc. in San Jose, Calif., will support U.S. Robotics modems in and around Chicago, Los Angeles, San Francisco, New York and Boston by mid-April. By year's end, the company will add modems in the Philadelphia, Washington, Seattle, Denver, Atlanta and Dallas.

- Sprint Corp. in Westwood, Kan., has no specific plans for deployment. A spokesperson said Sprint hopes to roll out 56K bit/sec. modems by year's end, when it expects a single standard to emerge.

- UUnet Technologies Inc. in Fairfax, Va., is testing both modems in laboratories, plans early field tests in May and will make 56K bit/sec. modem support generally available in June. It will decide which standard to support based on which seems most popular then. □

Novell takes wraps off new 'net products

CONTINUED FROM PAGE 63

enabled NetWare Loadable Modules. It includes the Proxy Server, firewall security, an integrated package of gateways between NetWare's IPX protocol and the Internet's TCP/IP and Virtual Private Network (VPN) capabilities.

All the Border Services components will be integrated with Novell Directory Services. That means network administrators will be able to use the same security and protocol policies across the internal corporate intranets and the Internet, and administrators will be able to manage access controls based on user identity rather than on a TCP/IP address.

Border Services also will supply IntranetWare users with firewall protection from inbound traffic and will deliver one security policy for corporate intranets, wide-area network and Internet communications.

A VPN component lets companies establish encrypted site-to-site connections for all Internet data transmissions. Users can secure their network connections without having to install an expensive dedicated leased line. □

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Snapshot

ONLINE CONSUMERISM

63% of U.S. consumers have shopped online (gathering information about products or services)

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23% have paid for a product via an online transaction

Source: 1997 Cybercitizen Report by Yankelovich Partners, Inc., Norwalk, Conn., a survey of 624 people who say they have been online

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Intranets begin to alter corporate culture

By Rebecca Sykes
BOSTON

MANY CORPORATIONS are sharing a common experience as they try out intranet technology — namely, that it is very easy to set up.

But the kind of problems being tackled with intranets is varied, as are the results, according to users who shared their experiences recently at the Zonathon '97 conference here.

Intranets can do more than link people and data. They can affect a company's whole corporate culture, as the employees and executives at Citibank are learning. At Citibank, which is just beginning to experiment with intranets, information is still fragmented and hard to find. Each department is enmeshed in its own work, said Ewart Newton, a Citibank vice president in New York.

Only 70,000 of the company's 90,000 employees worldwide are in the company's electronic-mail directory. That complicates communications, especially between employees in different nations.

Getting access to internal company information is difficult, at best. "If someone wants my knowledge, they've pretty much got to find me," Newton said.

But the intranet is changing all that, and not just by making information readily available. The intranet changes the responsibilities of employees, Newton said. Those with information can no longer sit back and wait for colleagues to ask them for it. With intranets, "it's up to me to make that information available into the public domain," Newton said.

Active information-sharing is counter to Citibank's historical corporate culture, according to Newton. For years, internal competition "was part of our culture, it was fostered," he said. Now that culture is giving way to cooperation and information sharing, he said.

For global companies, the change wrought by intranets is as profound as it is necessary, Newton said. Information sharing is a precondition to operating a global franchise, and companies that want to establish or maintain a global presence must cast off internal competition and seek ways to share information.

At Citibank, intranets are the means to that end. "We believe that the intranet is the first real enabler," Newton said.

TIMBERLAND CLIMBS ONLINE

The first intranet foray for The Timberland Co., a clothing and footwear manufacturer, met with quick success. Users quickly clamored for more functionality, including multimedia.

Timberland employees used E-mail and, to a small extent, Lotus Development Corp.'s Notes to share information. But employees typically shared information in person, even on routine issues, according to Dan Grosz, director of business systems planning at Stratham, N.H.-based Timberland.

Timberland put its sales catalog on a web server as a pilot test for its intranet project, a process that took two months, according to Grosz. Timberland's salespeople used the intranet to access the company's catalog from the road and to help make sales pitches during calls on customers, Grosz said. For example, with the catalog online, salespeople can copy parts of it into Microsoft Corp. PowerPoint presentations, Grosz said.

Having proved the value of the intranet to roving users, the company plans more intranet projects, including using the network to give users greater access to legacy systems, according to Grosz. □

Sykes writes for the IDG News Service's Boston bureau.

NEW PRODUCTS

TATUNG SCIENCE & TECHNOLOGY, INC. has announced a 64-bit World Wide Web server powered by two 200-MHz UltraSPARC processors.

According to the Milpitas, Calif., company, the Compstation U Model 2200I was designed for Internet service providers that must support hundreds of customer Web sites.

The product has high-speed data transfer and memory that is expandable up to 2G bytes, with storage of up to 8G bytes on the internal hard drive.

It costs $22,225.

Tatung Science & Technology
(408) 383-0988
www.tsti.com

SCALA COMPUTER TELEVISION, INC. has announced Scala MultiMedia MM-200, business presentation software that includes point-and-click Internet publishing.

According to the Herndon, Va., vendor, the MM200 lets a user prepare a presentation for reproduction and distribution by taking all the files that comprise a presentation and saving them as one file for easy distribution over the Internet. It allows cutting and pasting from other programs.

The MM200 costs $299.

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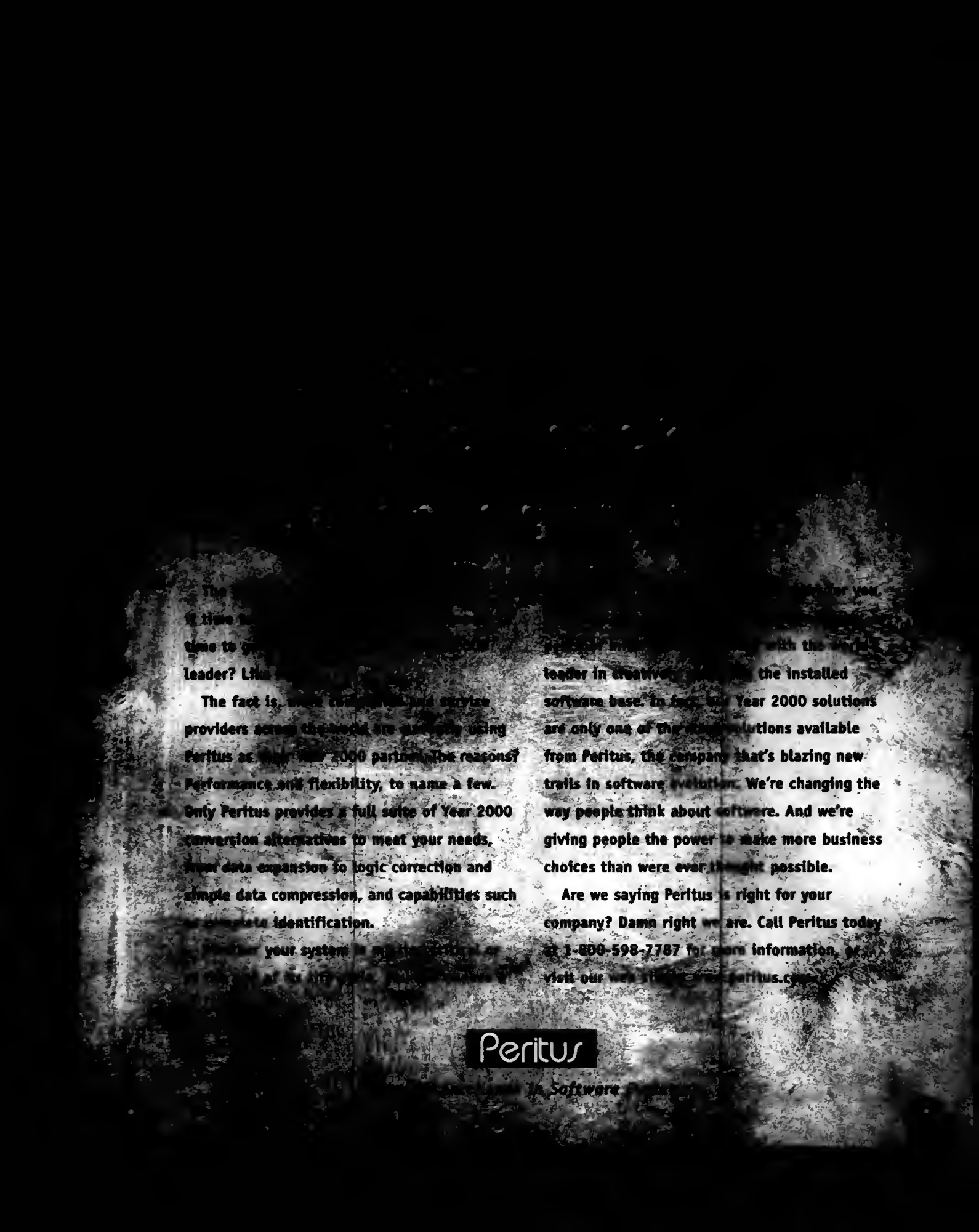
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May 5	Supplement: Electronic Software Distribution Distribution at Networld + Interop	Mar. 21	Apr. 11
May 12	White Paper: Evolution of Systems Management Distribution at DB/EXPO	Mar. 28	Apr. 18
Jun. 2	Solutions Series: Year 2000: Products (part 2 of 2) Distribution at PC Expo	Apr. 18	May 9

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In a survey of 1,200 CIOs, CEOs and other senior managers at the Healthcare Information and Management Systems Society conference in February, 62% of respondents said they expect their IT budgets to increase between 10% and 40% in the next two years.

But health care IS professionals cited a variety of frustrations in achieving their IT goals, including:

Lack of a strategic IS plan
22%

Difficulty in finding and retaining good technical staff
19%

Keeping up with changing technology
12%

Source: "Trends in Health Care Computing," sponsored by Healthcare Information and Management Systems Society, Chicago; and Hewlett-Packard Co., Palo Alto, Calif.



Swiss upgrade the hard way

▶ *Despite delays, Exchange automation project succeeds*

By Maryfran Johnson
ZURICH



"What we've really created is an automated chain which can run without any intervention – and quite fast"

IN A NATION legendary for discreet private bankers and efficient management of great wealth, controversy has hardly been welcomed with open arms.

Then along came the Swiss Exchange project, an ambitious undertaking to create a completely automated electronic securities trading system.

This showcase of Unix-based distributed client/server technology ran 18 months over deadline and tens of millions of dollars over budget.

Yet the world's seventh-largest exchange eventually emerged as unique in the unruly, frantic business of securities trading. With a daily volume of 30,000 to 50,000 trades, the Swiss Exchange confirms and settles 90% of its trades within 10 minutes — a process that takes anywhere from one to five

Swiss Exchange, page 70

Net computers push PC strategy into retirement

By April Jacobs and Michael Goldberg

WHEN THE NEW CIO at the largest mail-order prescription company in the U.S. got marching orders to take it into the 21st century, he thought: network computers.

Retired Persons Services, Inc. (RPS) had to be cost-effective and competitive in a discounted drugs market that is growing each year, said Chief Information Officer Donovan Resh.

His Reston, Va.-based company is the pharmacy arm of the American Association of Retired Persons.

Resh said his primary job last summer was to make the prescription-filling process less labor-intensive, while making the business more competitive

Network computers, page 72



RECORDS ACCESS

Web app may cut costs at Social Security

By Sharon Machlis

TAXPAYERS CAN NOW GET an online estimate of their retirement benefits from the Social Security Administration's World Wide Web site.

The program is still being tested but is accessible to the public at www.ssa.gov/pebes.

It marks the first time the federal government has offered Internet access to personalized records from a government database.

ONLINE ACCESS

Until recently, users could request their benefit estimate on the Web and get the data via postal mail. But many who logged on asked to receive the information online as well, according to Social Security webmaster Bruce Carter.

Although the agency hasn't publicized the new service except on its own Web site, its availability has already more than doubled requests for bene-

Social Security, page 70

Disparate firms share in training

By Thomas Hoffman

UNITED HEALTHCARE CORP. is a Minnetonka, Minn.-based health care provider, and Hartford, Conn.-based United Technologies builds Otis elevators and Carrier air conditioners.

Despite their differences, the two companies have found common ground to share resources for training.

By videoconferencing seminars to desktop users and information systems staffers, both companies spend less on individual courses to train workers in subjects such as IBM CICS and Microsoft Corp. Excel spreadsheets.

Executives at both companies said they aren't sure how much money the 3-month-old partnership will save, but one training expert said similar collaborations have yielded 40% savings in stand-alone training costs.

Training focuses on specific skills and skips over introductions and irrelevant topics.

The project, launched in January, is being coordinated by Rensselaer Learning Institute (RLI) in Hartford, Conn. RLI has provided long-distance technical training to United Technologies' 160,000-person workforce since 1992.

Seeking ways to cut costs under managed health care, United Healthcare decided it, too, needed a more effective way to provide training to its remote staff.

"We had no infrastructure to support the development of our employees," said Allen Stein, director of The United HealthCare Learning Institute, which handles training for 29,000 employees as far-flung as South Africa and Ireland.

United Healthcare's annual training budget more than dou-

Training, page 70

Swiss Exchange finds success

CONTINUED FROM PAGE 69

days at the larger U.S. stock exchanges.

"What they've done among the major exchanges of the world is absolutely unique," said Octavio Marenzi, a research director at Meridien Research, Inc. in Needham, Mass. "Most of the other exchanges have automated one portion of the whole trading process, but the Swiss Exchange automated everything from A to Z, the whole life cycle of the trade."

The business benefit was threefold. It created an open, level playing field for every member of the Exchange, because all trading activity is visible online within minutes.

It also saved those same members the money they previously spent to maintain people-intensive, back-office operations to track all the paper involved with securities trading.

But most important to the Exchange, the upgrade helped it stem the loss of business to the London Stock Exchange (see story at right).

"What we've really created is an automated chain which can run without any intervention — and quite fast," said Juerg Spillmann, head of the IT division of the Swiss Exchange. Spillmann said the Exchange turned over the equivaleot of $4.6 billioo on a recent trading day.

MEGAMERGER

Led by large banks, a host of Swiss financial firms underwrote the Elektronische Borse Schweiz (EBS) system project in the early 1990s. In 1993, the country's three separate exchanges were merged with the Swiss Option and Financial Futures Exchange (SOFFEX) to create the Swiss Exchange.

"It was a very painful process for everyone at the time," recalled Marenzi, who was in charge of IT planning at Union Bank of Switzerland while the EBS system was being built.

Original cost estimates of 80 million Swiss francs (about $60 million) proved too modest. "The development of the Exchange cost [about $112 million], but that's pure development, project costs and training only — not hardware costs," said Spillmann, who helped create and now manages the integrated EBS and SOFFEX systems. The systems have been in full operation for several months. Next month, the Exchange will ship the next full maintenance release of the customized EBS trading software to its 54 member banks and financial institutions. That release will be based on Sun Microsystems, Inc. UltraSPARC servers and Sybase, Inc.'s Sybase 11 database software.

At the core of the trading system is a cluster of 64-bit AlphaServer systems that run OpenVMS and are equipped with Reliable Transaction Router (RTR), Digital Equipment Corp.'s fault-tolerant transactioo messaging middleware. RTR serves as the underpinning for a high-speed Digital network that connects 1,000 oodes at financial institutions throughout Switzerland.

Instead of dashing about on a trading floor and using the open-outcry method, the traders work off Sun and Digital Unix workstations. The Windows 3.1-based office environment is being upgraded to Windows NT for the firm's 250 users.

"We plan to offer the Exchange members the trading system hardware of their choice in the near future," said Spillmann, who has an operational staff of 15. "We still believe that our members will continue to use Unix servers as the primary trading engine." □

Looking for an edge

The driving force behind the creation of the world's only end-to-end electronic exchange was partly sheer business rivalry.

"The Swiss were losing a fair amount of trading activity to the London Stock Exchange, so they were looking to gain some leadership again," said George Kivel, group director of wholesale banking at The Tower Group, a financial analysis firm in Newton, Mass.

Regaining a leadership role also was important for creating a competitive marketplace for Switzerland's financial center, especially with the 1999 deadline looming for the development of one big European market, analysts noted.

"What they have today is a winning system. The trade volumes have gone up dramatically, probably 40% for this year," Kivel said.

Financial industry watchers said the Exchange members — who collectively spent at least $350 million in the last few years to update their own back-office operations to take advantage of electronic trading — are quickly realizing substantial paybacks. One member bank reported a $14 million savings in its first year with the new system.

"For the big three Swiss banks — Credit Suisse, UBS and Swiss Bank Corp. — the savings could easily amount to $15 million a year in back-office consolidations," said Octavio Marenzi, a research director at Meridien Research. — Maryfran Johnson

Training unites firms

CONTINUED FROM PAGE 69

bled to $2.3 million after Stein arrived last May. The company's previous training budget "was spent without any strategic approach to it," Stein said.

It was spending much of that money on travel and losing money on diverted work costs, and course content wasn't always specific to employees' jobs, he said.

Education "is not a core product line of companies. It's how they use education that can have an impact on their competitive position." – Steve Bieglecki, United Technologies

United Healthcare isn't alone. Education "is not a core product line of companies. It's how they use education that can have an impact on their competitive position," said Steve Bieglecki, director of technical education and training at United Technologies, which spent $28 million on training and development for its staff last year.

For United Healthcare, much has changed since Stein came aboard. The company last month customized what had been a 7.5-hour off-site Lotus Development Corp. Notes 4.1 course into a pair of two-hour multimedia sessions.

The seminars were presented by 20 RLI instructor over Integrated Services Digital Network connections to IS staffers in Troy, N.Y., Hartford, and Somerset, N.J.

The sessions focused specifically on modules that employees needed to learn. "We believe our employees will be able to get a higher skill transfer this way," Stein said. He may be right. By using customized computer-based training programs that eliminate lengthy course introductions, or "yada-yada stuff," companies can typically slash training time in half.

And they can "cut out topics that are irrelevant to your job," said Brandoo Hall, editor and publisher of "Multimedia & Internet Training," a newsletter in Sunnyvale, Calif. □

Social Security

CONTINUED FROM PAGE 69

fits estimates from an average of 2,900 per week to 7,800, Carter said. Officials are waiting until they are satisfied that problems will be ironed out at current usage levels before they promote heavier usage of the service.

Most requests are still made via paper forms that cost the agency about $5.23 each to process vs. "almost nothing" for each additional electronic query, Carter said.

The agency has been ordered by Congress to provide annual benefits estimates for every worker over age 25 — about 123 million people — by 2000. "It's a very expensive mandate," Carter said. "Everyone who does it [online] woo't have to get one mailed. We believe it will save a lot of money."

The estimates include a detailed history of reported earnings and Social Security and Medicare taxes paid, as well as projected retirement, disability and other benefits. The reports help find data errors, such as workers at small businesses who wereo't properly credited for taxes they paid. About 2% of all Personal Earnings and Benefit Estimate Statements contain such errors, Carter said.

The agency is using the Secure Sockets Layer (SSL) protocol to encrypt data during the online transactions.

Recent versions of Netscape Communications Corp.'s Navigator and Microsoft Corp.'s Internet Explorer support SSL. Some other browsers, including text-based Lynx for Unix, don't.

SECURITY CONCERNS

While Social Security officials believe SSL will safeguard data transmitted over the Internet, the agency also warns users that it "cannot absolutely guarantee that the information . . . will not be intercepted by others and decrypted." Users can still receive estimates by mail.

SSL is one of the most popular network security protocols in use. More than 10% of Web servers queried by O'Reilly and Associates, Inc. in Sebastopol, Calif., had enabled SSL for Internet transactions, according to a December survey.

The agency also must try to protect the data from impostors who attempt to find out information about other people through the system. The electronic form includes two extra questions not found on the paper version — the taxpayer's place of birth and mother's maiden name — to verify an individual's identity.

Although he urged Social Security to tightly monitor the site to prevent abuse of the data, privacy advocate Marc Rotenberg endorsed the concept.

"One of the principles of privacy protection is the right of individuals to access their information" held by the government, said Rotenberg, director of the Electronic Privacy Information Committee in Washington. "I think it's a step in the right direction."

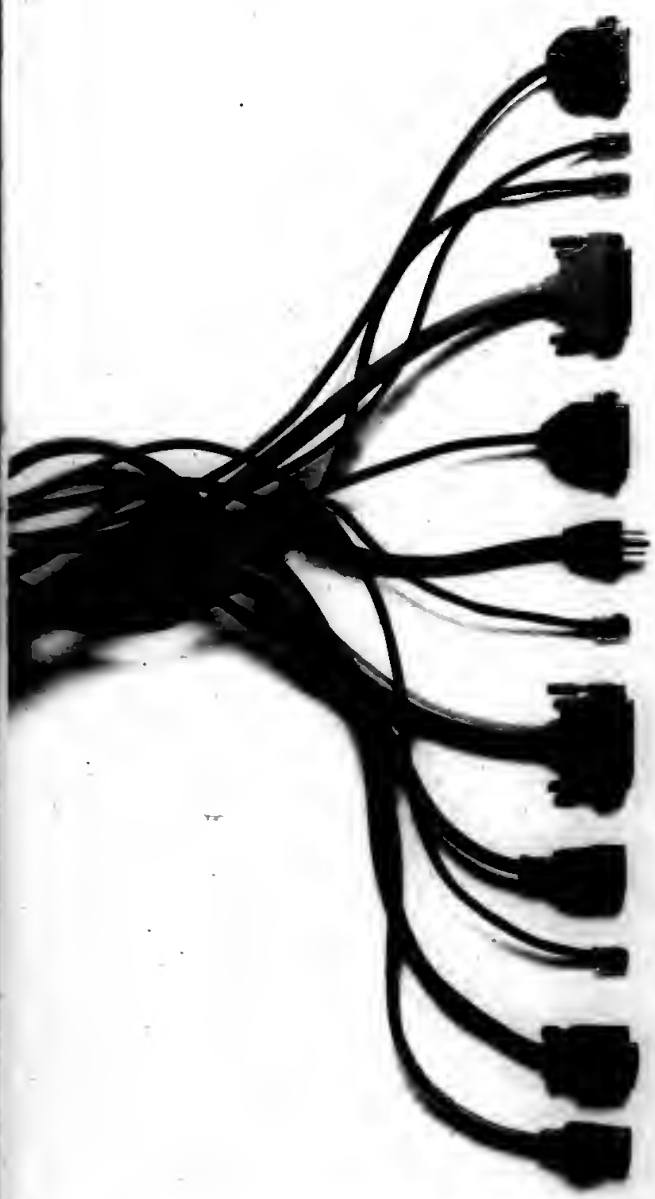
A few glitches have cropped up so far, Carter said, such as "some quirky complaints" from America Online, Inc. users. Problems have been linked to specific versions of AOL's browser, he said.

And some users seem unwilling to scroll through detailed instruction forms before seeking their benefit estimate. "We are running into the nature of the Web," said John Sabo, director of electronic services staff at the Social Security Administration. "Many, many Web users are not patient. People don't necessarily want to read help screens or instructions . . . but you cannot make everything intuitive." □

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Net computers retire PC strategy

CONTINUED FROM PAGE 69

as it faces challenges in a burgeoning market.

Resh said RPS first started looking at network computers in October. The company had intended to go with PCs for 1,000 employees who primarily work at a prescription-order fulfillment center in Horsham, Pa., and a call center in Roanoke, Va.

Those employees fill 40,000 drug prescriptions daily for a clientele of millions. They now use @Workstations from HDS Network Systems, Inc. in King of Prussia, Pa.

COST ANALYSIS

A major factor in the decision to use network computers was a two-phase cost analysis, Resh said. "The cost of ownership is the primary concern," he said.

Resh's analysis indicated that the company would spend $1.9 million on 1,000 network computers and 20 multiprocessor servers from Advanced Logic Research, Inc. in Irvine, Calif.

That is $500,000 less than it would have cost the company to outfit 1,000 desktops with PCs supported by 10 servers, Resh said.

While installing the network computers, RPS also is going through a back-office modernization.

The company is migrating from Digital Equipment Corp. legacy VAX servers that run VMS to newer AlphaServers that run Digital Unix to support new financial, human resources and order-fulfillment applications on an Oracle Corp. database. The company also is designing a wide-area network to link offices around the nation.

Resh said the primary benefit of network computers for RPS is in the estimated cost of ownership over five years.

It costs about $500 annually to maintain a server-centric network computer, compared with an estimated $7,000 per year to support a 100-MHz Pentium-based PC with 32M bytes of RAM, Resh said.

Spread out over five years, the cost of maintaining 1,000 network computers ($2.5 million) pales compared with the estimated $35 million to maintain 1,000 PCs, he said.

One example of the cost savings so far, Resh said, can be found at the help desk.

"With [network computers], we saw a reduction within weeks in the cost of our help desk," with end users making fewer calls for help than current and former PC users, Resh explained.

TASK-ORIENTED

Part of Resh's success is based on the types of users he has:

They do repetitive transaction-based processing such as order entry and drug utilization reviews, he said.

And they use a small number of applications repeatedly that require them to retrieve data, save data or send transactions for processing by the company's back-office systems.

Neil MacDonald, an analyst at Stamford, Conn.-based Gartner Group, Inc., said Resh's decision, which was based on his users' needs for quick access to applications and a user-friendly interface, makes sense from cost-of-ownership and performance aspects.

And by implementing network computers, MacDonald said, applications and performance can be upgraded at the server level, which gives the desktops a long life expectancy, unlike PCs. □

NCs don't belong everywhere

Network computers aren't for every one.

Donovan Resh, CIO at RPS, and observers agreed that the mail-order prescription company's end users were good candidates for network computers, given the repetitive and relatively simple tasks they perform.

Steven Snyder, chief technology officer at Coopers & Lybrand in New York, said his company rejected network computers outright and went the PC route because of its end users' more complex needs.

The consulting practice has 16,000 mobile workers who use highly customized applications, groupware, electronic mail and Internet access — all of which require remote access, Snyder said.

Greg Blatnik, an analyst at Redwood City, Calif.-based Zona Research, Inc., said NPC "may be ahead of the curve in terms of the volume [of network computers] deployed" but is using the devices in very conventional ways — as end-user stations on a LAN, for example.

Blatnik said many users who conduct a cost-of-ownership analysis might find Resh's big savings in favor of network computers over PCs a tad rosy. "We've come up with different showing it costs 50% less overall for thin clients," Blatnik said.

Resh said RPS still has 1,000 PCs, and he will look to convert more desktops to network computers. He said he expects to find some substitutes. "There are some people who really don't [if the chief financial officer] says he needs a PC to run an Excel spreadsheet, I'm not going to fight about it," Resh said.

—April Jacobs and Michael Goldberg

NEC blasts Commerce on its ruling in supercomputer case

By Sari Kalin

JAPAN'S NEC CORP. last week blasted the U.S. Commerce Department's preliminary ruling that it dumped supercomputers, calling the charge "the result of an unfair and biased investigation."

In a statement through its HNSX Supercomputers, Inc. subsidiary in Boxboro, Mass., NEC charged that the Commerce Department couldn't rule impartially on the dumping allegations.

Those allegations came from Cray Research, Inc. in Eagan, Minn., which filed the dumping complaint last summer.

ON HOLD

In a preliminary finding, announced March 31, the Commerce Department said NEC planned to sell four supercomputers to the National Center for Atmospheric Research (NCAR) last year at a price 454% below fair market value.

The National Science Foundation, which controls funding for the $35 million purchase, has put the sale on hold since the dumping controversy erupted last year.

The Commerce Department is expected to issue its final decision in August.

The U.S. International Trade Commission also will determine whether the dumping harmed U.S. industry; its decision is expected by October.

The Commerce Department also preliminarily found that Fujitsu Ltd., which competed against Cray and NEC for the NCAR contract, priced its supercomputers at 27.17% below fair-market value.

Fujitsu, in Tokyo, couldn't be immediately reached for comment.

NEC has filed suit against the Commerce Department in the Court of International Trade to get an independent official to investigate the dumping allegations. NEC was unsuccessful in getting an injunction to enjoin the Commerce Department's ruling, and the case is still scheduled to go to trial this month. Cray and NEC officials said.

Cray officials said they believe the Court of International Trade will rule that the Commerce Department wasn't biased. At the worst, the court could require the Commerce Department to accept testimony from NEC and to appoint new officials to hear the case.

The dispute started last year when Cray, NEC and Fujitsu all vied for an NCAR weather and climate research supercomputer contract. NCAR, a government agency managed by the University Corporation of Atmospheric Research, awarded the contract to NEC.

Cray last July filed a dumping complaint alleging that NEC planned to sell four supercomputers to NCAR at a $65 million loss. NEC has repeatedly denied the charge. □

Kalin writes for the IDG News Service, Boston bureau.

Internet advertising in Japan expected to rise by 250% this year

By Rob Guth
Tokyo

INTERNET ADVERTISING in Japan this year will reach 4 billion yen ($32 million), an increase of more than 250% from the previous year and a sign of Japan's growing Internet fever, according to a survey by Tokyo-based advertising agency Dentsu, Inc.

Spending last year hit 1.6 billion yen, of which 50% was recorded in the last two months of the year, according to Dentsu.

THE SURVEY

Dentsu's survey looked at expenditures for the production and placement of World Wide Web advertising for the domestic market by information providers in Japan..

Dentsu defines Internet advertising as a medium with independent content with "clearly understood rates according to advertising space."

The ads surveyed included those placed on sites of conventional media companies, search engines and online newspapers, and sites that combine media such as the Web and a CD-ROM. Dentsu said the 4 billion-yen estimate is just a sliver — less than 1% — of Japan's total annual spending on advertising, which will exceed $46 billion this year. □

Guth writes for the IDG News Service in Tokyo.

SHORT

Year 2000 help for telecom

IBM Global Services in Somers, N.Y., and Bellcore in Morristown, N.J., have formed a strategic partnership to provide year 2000 services to telecommunications carriers. The services are expected to tackle some of the unique requirements of telecommunications carriers, such as date-sensitive equipment that is used between end-to-end telecommunications networks. The services, available now, include impact analysis, strategic planning, conversion and testing.

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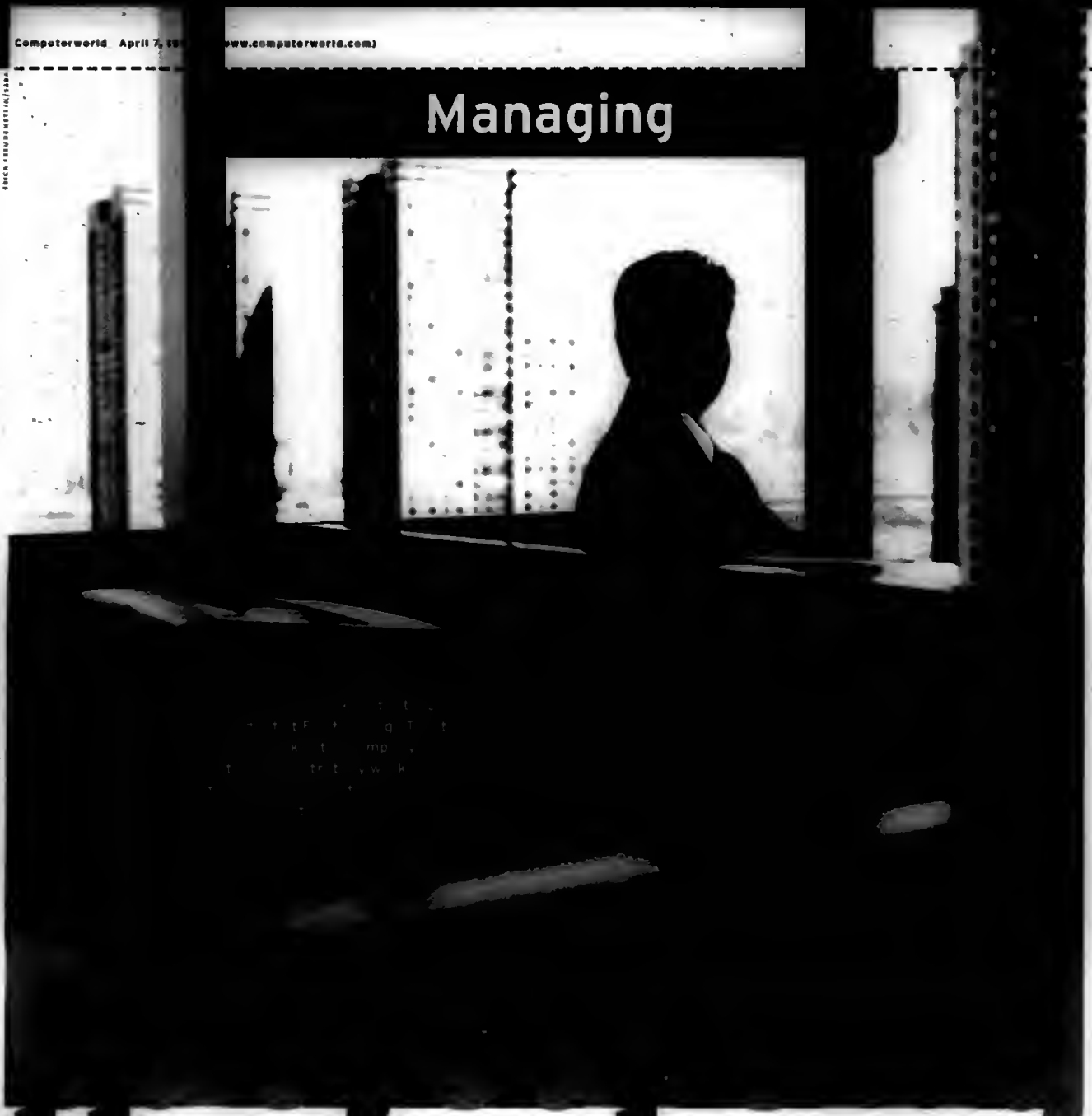
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Managing



the 'net

By Gary H. Anthes

Farming out some Internet functions can bring rewards, but it entails some unique risks

CONTINUED FROM COVER 1

It's one thing to outsource something that's rock solid — such as mainframe operations — and quite another to turn over to outsiders something about as stable as Silly Putty.

SEEING THE WHOLE PICTURE

Eastman Kodak Co., which pioneered the information systems outsourcing idea in 1989, decided five years later to hold on to all its Internet activities, because the environment was too dynamic and its own plans uncertain.

"If you can't write the specifications for something, you can't outsource it," says Joseph A. Luppino, director of IS services at Kodak in Rochester, N.Y. "A lot of people are outsourcing this stuff specifically because they don't understand it, but that's fundamentally flawed."

But other companies, such as First Chicago Trust Co. in Jersey City, N.J., have turned over to outsiders all things Internet-related. First Chicago uses BBN Planet in Cambridge, Mass., to host and maintain its two Web servers and provide firewall security services.

First Chicago also outsourced the development and ongoing content maintenance for a Web service that lets registered shareholders vote the proxies of some of the company's clients that are authorized to vote electronically.

Functions that can be outsourced include Internet connectivity, Web server hosting, firewall security, World Wide Web site development and content development. According to Frank J. Casale, executive director of The Outsourcing Institute in New York, those are good candidates for outsourcing to the extent a company sees them as complex, subject to frequent change and not highly relevant to its core competencies.

But how do you make an outsourcing strategy work?

Sajoo Samuel, an assistant vice president at First Chicago, says he makes the total strategy work through close day-to-day management of the external relationships. "It's transparent to our end users," he says. "It appears to them that everything is taking place internally."

An internal project manager works with the outsourcers daily while serving as a liaison with internal business units, Samuel says. The project manager and outsourcer follow a schedule they have jointly committed to, he says.

LOOK OUT FOR CHANGES

Eric Paulak, a senior analyst at Gartner Group, Inc. in Stamford, Conn., warns companies that have outsourced to multiple vendors to pay special attention to change management. "You have to have in place policies about who is going to manage the vendors and who will accept changes from whom," he says. "The biggest challenge is developing the process for managing this."

The Chicago Mercantile Exchange outsourced its Web hosting to BBN Planet and took several steps to ensure quality service, says Stephen Goldman, senior director of network services. The exchange wrote special monitoring software — running both at BBN and at its own data center — to ensure that real-time feeds are sent to BBN and are posted correctly.

Goldman advises paying special attention to contract terms. He says outsourcers come with boilerplate contracts, but customers can improve them by insisting on service-level guarantees that include details such as the amount of disk space to be devoted to the customer.

Playboy Enterprises, Inc. in Chicago outsourced Web hosting but not Web site development or maintenance. "I feel very strongly about keeping content development in-house," says Eileen Kent, vice president of new media at Playboy. "No one knows your company and your products as well as you do."

Kent says she's "shocked at the poor quality" of some Web sites put up by outsourcers. "Managers sometimes just abrogate their responsibilities to a Web firm," she says.

BE SPECIFIC ON PERFORMANCE

Kent recommends giving Web-hosting companies very specific performance goals. "You can say, 'My users are using 28.8 modems, and I want to be sure they can download this page in x seconds,'" she says.

But some experts caution against trying to write detailed specifications into contracts and recommend instead an emphasis on flexibility. Scope of services, performance metrics and prices should be defined with change in mind, says Robert Zahler, a partner and an outsourcing specialist at Shaw, Pittman, Potts & Trowbridge in Washington.

Zahler also advises against the long-term contracts common in traditional outsourcing deals. "There's no reason to make it longer than one year," he says. "Let the contractor re-earn his business."

Honeywell, Inc. employs a decentralized management style and until recently let its webmasters chart their own course in each of 95 countries. "There was this enthusiastic grass-roots effort, but it was uncontrollable, and it failed to satisfy any unifying strategy," says John Cochran, director of corporate identity and interactive media at the company's Minneapolis headquarters.

So Honeywell formed a 20-person global steering committee for the Internet. The group wrote everything from acceptable usage policies to standards for how the company logo should appear online. Outsourcers must adhere to those standards, Cochran says.

Type of Web service	Annual cost*
Passive site with basic graphics	$3,600 to $7,200
CGI scripting, Java-enabled applications, fancy graphics	$40,000 to $96,000
Transaction processing and real-time database access	$250,000 and up

*Estimated

Source: Gartner Group, Inc., Stamford, Conn.

Web site design	47%
Hosting and access	42%
Maintenance and support	40%
Application development	32%
Web site management	31%
Architecture planning	29%

Source: Computer Intelligence, a technology research firm. In December it studied 150 companies with at least 1,000 employees who had attended Softbank forum events in the previous six months.

SOUND MANAGEMENT

Experts say a wide variety of outsourcing strategies can work as long as sound management practices are applied. "The biggest pitfall we've seen in Internet outsourcing is in managing the underlying business function rather than anything unique in terms of technology," says Barry Weiss, an outsourcing specialist and partner at Gordon & Glickson PC in Chicago.

Because Internet technology and usage change so rapidly, Internet outsourcing is inherently unmanageable, says Bill Schallenberg, manager of Internet services at Marriott International, Inc. "It's a little by the seat of your pants in this industry," he says. "Sometimes you just have to do it and then come back and see how well you are doing."

Schallenberg says the way to manage Internet outsourcing is to pay a premium and go with the very best vendors. Marriott outsourced Web hosting to UUnet Technologies, Inc., which Schallenberg calls a "superb" company.

"You get what you pay for. I don't lose sleep about my server being down," he says. □

Anthes is Computerworld's senior editor, special reports.

COMPUTERWORLD
Want to learn more about outsourcing Internet functions? Look to our Web site (www.computerworld.com).

Outsourcing Pros and Cons

Sajoo Samuel, an assistant vice president at First Chicago Trust, ticks off the reasons most commonly given for Internet outsourcing:

- **It's the fastest way to establish a robust Web presence.**
- **It's less expensive.**
- **It avoids the need to hire and train people with scarce skills.**
- **It's potentially more secure.**

But the main reason large companies like outsourcing is the management time it frees up, says Eric Paulak, a senior analyst at Gartner Group. "If you have to worry about every [router] upgrade or software Version 4-dot-whatever for your firewall, that just eats up time that could be spent designing your Internet environment or Web site," he says. "It's a productivity killer."

Chicago Mercantile Exchange officials say outsourcing Web hosting to BBN Planet has brought advantages and disadvantages. BBN offers superb security, network management and round-the-clock response to operational problems, says Stephen Goldman, senior director of network services.

"But the biggest trade-off is the ability to react fast," Goldman says. "Our application developers would like to bring it in-house in order to be able to make changes faster."

Neil Pitts, manager of strategic infrastructure programs at Kodak — which hasn't outsourced any of its Internet activities — agrees that outsourcing can be constraining. But he acknowledges that outsourcing Web hosting would relieve Kodak of some management headaches.

"We host multiple geographical locations in the world. It requires us to manage all the interactions and links and firewalls, and that might be something we don't want to continue to do," Pitts says.

When Honeywell recently decided to redesign its corporate Web site, it decided to do it entirely in-house. And it's beginning to move its Web servers in-house from Internet service providers, says John Cochran, Honeywell's director of corporate identity and interactive media.

Cochran explains the retreat from Internet outsourcing this way: "Early on, when we were experimenting with the Internet, it didn't seem like something that ought to be a core competency for us. But we have now ascertained that the Internet is a strategic business tool for Honeywell and is deserving of significant resources and strong management."

If you're thinking about outsourcing Internet functions, consider the following factors:

Outsourcing may make sense when:

- **A fast start-up is important.**
- **Internet skills are lacking internally.**
- **An outsourcer has better security arrangements.**
- **You need high reliability and round-the-clock coverage and can't provide that in-house.**

Outsourcing probably isn't a good idea when:

- **Your Internet services are of strategic importance and you demand maximum control over them.**
- **Your Internet services are ill-defined.**
- **You demand, and can provide in-house, rapid change to design and content.**
- **You can do it more cost-effectively in-house (you have excess capacity). — Gary H. Anthes**



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RESOURCES: FOR IS MANAGERS

BOOKSHELF

Earned Value Project Management

By Quentin W. Fleming and Joel M. Koppelman
Project Management Institute, Upper Darby, Pa.; 138 pages; $24.95 (paperback)
Review by Jillayn R. Wolleat

Most project managers with formal project management training know earned value is what you get for what you spend. It's a three-dimensional "early warning" signal for management. Instead of the conventional actual cost vs. budget comparisons, it includes the dimension of relating the project's scope to the schedule and to the cost performance. It's the "budgeted cost of work performed," known affectionately as BCWP.

Fleming and Koppelman try to simplify this fundamental project management technique. They suggest "earned value for the masses," not just for the Department of Defense. They say project management techniques must be simple and easy to use or they simply won't be used. They're right.



A simple look at earned value is exactly what many project managers in private industry need. When I read the introduction, I thought this book would provide a cookbook approach to the use of earned value, with the authors presenting a project scenario that would show how valuable earned value is and how easy it is to use.

But it never happened. Instead, I got a great historical review of the use of earned value and a modest look at some other basic project management concepts and tools. The authors repeat important concepts numerous times, which helps confirm ideas to be remembered but is a bit irritating if you comprehend well on the first read. The essence of what is covered could have been done as well in half the number of pages. In some cases, reading the chapter summary is sufficient.

Most project managers will benefit from reading the introduction, Chapter 1 ("An Overview of the Earned Value Concept"), Chapter 5 ("Plan and Schedule the Project"), Chapter 6 ("Estimate and Budget Project Resources Within Cost Accounts"), Chapter 7 ("Establish the Project Baseline"), Chapter 8 ("Monitor Performance Against the Baseline") and Chapter 9 ("Forecasting Final Cost and Schedule Results"). Beyond that, skimming other chapters and reading the summaries is probably sufficient.

Wolleat, PMP, is founder of the Central Alabama Chapter of the Project Management Institute and a consultant for Computer Task Group in Atlanta and Birmingham, Ala. She can be reached at JWolleat@gw.ctg.com.

Managing Technical People: Innovation, Teamwork, and The Software Process

By Watts S. Humphrey
Addison-Wesley Publishing Co., Reading, Mass.; 326 pages, $24.69 (paperback)
Review by Nick Maniaci

If there is one overriding management issue in the late '90s, it's recruiting, retaining and motivating talented technical professionals in an era of fierce competition and ever-diminishing resources.

Humphrey tackles this issue head-on. I liked his focus on how people's behavior can make a technical group successful. Many books have been written on how to obtain and enhance technical skills, which are obviously important and would quickly lead to failure if not kept sharp. But Humphrey rightly argues that self-confidence, peer recognition and company respect are the chief factors that can improve performance. One particularly strong point: Money doesn't always drive high-performance teams. Peer recognition will go further.



Unfortunately, many of the examples Humphrey uses are based on his past experience at IBM, where for many years he was a senior software development executive. Readers would benefit from more current examples of companies (including IBM) that have dealt with the pressures of managing technical teams in highly competitive and downsized environments. If managers are to succeed (i.e., survive), they need to learn how to change their organizations quickly.

Humphrey provides no sample checklists that you can use to screen applicants or test for "creative" characteristics. If you're looking for a quick fix for your team, this isn't the book for you. But if you're a new manager or have been charged with rebuilding a technical group and have the time and luxury to implement some of his suggestions, this book will help you organize and manage a successful technical team.

Maniaci is technical manager at GE Information Services. His Internet address is nickm@geis.geis.com

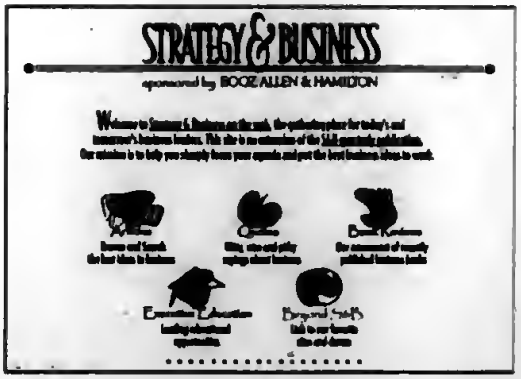
WEB SITE

Strategy & Business

www.strategy-business.com

If you're a business leader (or a wanna-be), you might find some ideas and insight at this site, launched last month by Booz, Allen & Hamilton, Inc., the New York-based management consulting firm. The site is an extension of the quarterly publication sponsored by the firm. You can find book reviews, a listing of educational opportunities and recent strategy and business articles. Two articles from the first quarter discussed marketing lessons learned from the rock group the Grateful Dead and the rise of intranets.

Looking for a quote to help you with a speech or presentation? Click on the quotes page. The fourth-quarter list includes sayings from Adam Smith and Groucho Marx, among others.



Upcoming Conferences

Got time for work-related travel? Try these selections that were previously listed as Hot Happenings for April:

The AIIM '97 Conference, April 14-17 at the Jacob Javits Center in New York, includes 119 sessions and 350 exhibitors in the field of document and information management. Look for exhibits on groupware and data warehousing, among others. Contact: The Association for Image and Information Management International (AIIM), Silver Spring, Md. (800) 477-2446 or (301) 587-8202; Web site: www.aiim.org.

Internet Showcase 97, April 27-30 at the Sheraton San Diego Hotel and Marina, will spotlight new technologies and products. Expect exhibitors to put their best feet forward: Product demonstrators must be senior executives. Contact: Jill Pendergast, (415) 577-2533; E-mail: jpendergast@upside.com; Web site: upside.master.com/conf/showcase.

Need more choices?

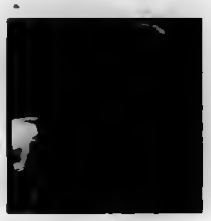
The 1997 International Information Technology Quality Conference, April 14-18 at The Grosvenor Resort, just outside Orlando, Fla., will focus on management, project leadership and quality assurance. Contact: The Quality Assurance Institute, Orlando, Fla. (407) 363-1111; Web site: www.qaiusa.com.

DCI's Internet Expo and Sales Force Automation Expo, April 22-24 in Chicago. Internet Expo will show how the 'net, Web and E-mail can enhance your business. "Sales Force" aims to help improve your competitive edge and boost revenue. Contact: Digital Consulting, Inc. (DCI) in Andover, Mass. (800) 324-3976; Web site: www.dciexpo.com.

COMPUTERWORLD

Visit our Web site, @Computerworld (www.computerworld.com), where you can find listings of upcoming events on the Events Calendar and Online Caveats pages.

IN MANAGING, LOOKING HONEST IS BEST POLICY



What you do if you suspect an influential figure in your company of favoring a vendor that gives him gifts or junkets? How should you go to check out your suspicions?

These aren't questions just for special prosecutors and congressional committees. They are also for IS staffers and their bosses.

IS departments control millions of procurement dollars, and it isn't unusual to have a junior manager or staff member making recommendations on extensive expenditures. With so much on the line, vendors may well offer inducements, from sporting-event tickets to expensive meals, travel and other goodies. Just when do we step over the line and take personal advantage from a procurement assignment? What about policies to prevent conflicts of interest?

Consider two cases, one involving investment activities and another the procurement process itself.

Alfred was a vice president at a large manufacturing company. As he neared retirement, he was concerned about how he would finance his golden years. He was put in charge of a project to bring imaging technology to the firm. After reviewing several vendors, he chose Company X to be the exclusive supplier. Company X wasn't quite a start-up but had recently gone public and was struggling to establish its long-term viability. It spared no expense in convincing Alfred it was the right vendor, flying him to its headquarters and wining and dining him whenever its officials were in his town.

Alfred spoke glowingly of Company X and the project. But the plant manager had a different view. He didn't support the project, believed the technology didn't work as advertised and was unwilling to re-engineer his process to accommodate it. Alfred pushed back hard. Rumor had it that Alfred had invested heavily in the imaging vendor and that his investment was motivating his advocacy of Company X. The CIO, believing that an individual's investment strategy is a private matter, didn't raise the issue with Alfred.

AT ANOTHER FIRM

Jerry was a manager in operations support, responsible for selecting the vendor to supply and support a major laptop purchase. The selection process was time-consuming and tedious, requiring long hours and involving multiple visits to vendor sites and reference installations.

Need some advice?

Are you perplexed by a management problem — or a problem with a manager? Pass it along to Lallen Allen via E-mail at lallen@tenex.com. She'll answer questions in print and protect confidentiality if you wish. But be sure to include your name, address and telephone number for verification.

The vendors had agreed to pay Jerry's expenses during this due-diligence phase. Managers at Jerry's company had no problems with that.

Jerry's vice president discovered through a confidential source that Jerry was taking his new wife on trips sponsored by Vendor Y and that the trips frequently stretched across weekends. Company policy allowed employees to take their spouses on trips as long as it wasn't at company expense. Besides, the vice president sympathized with the personal situation. When the recommendation came out in favor of Vendor Y, the vice president scrutinized the document carefully. But he could find no evidence of bias, believed the recommendation was reasonable and concluded there was no harm done. As a result, the vendor that sponsored Jerry's post-honeymoon weekend getaways got the contract.

Judgment call: Alfred and Jerry may have thought they rendered objective opinions. But a third party, such as a losing vendor, might well question the degree to which their personal well-being influenced their judgment.

Both cases show that companies need clear-cut policies that apply to anyone engaged in procurement decisions, from the staff member who does the analysis to the senior executive who signs the contract. Such policies protect the individual as much as the firm. Prohibiting investment in potential vendors is too extreme, and forcing employees to disclose their investment portfolios is probably an invasion of privacy. But individuals should be asked to disclose any financial interest in firms under consideration and to affirm that such investments in no way influence their decisions. Travel and entertainment can easily be abused, and vendor expenditures in that area should be constrained. For example, meals should be less than $100, travel expenses should cover only the employee and be limited to weekdays, and gifts exceeding a value of $50 should be prohibited.

Absent a corporate policy, the IS executive should establish a policy for the department and make potential vendors aware of it. If a manager hears rumors of impropriety, a reminder about the policy is appropriate.

Any appearance of impropriety or any question that a purchasing decision was made based on personal advantage rather than the merits of the case undermines the entire selection process and compromises the integrity of IS as a whole. And that can't be tolerated. □

Allen's column deals with the kinds of people issues that managers face every day but are reluctant to discuss openly. Each column is based on real-life situations. The names and certain circumstances are changed to protect confidentiality. Allen is a director at Tenex, a management consulting firm in Burlington, Mass.

f.y.i.

Pushing data to the top

If you work for a small company, there's a one-in-three chance your CEO doesn't spend enough time tracking key business information, a new survey indicates.

Sales, cash flow and accounts receivable are some of the data that isn't being monitored sufficiently by companies with annual sales of $1 million to $50 million, according to the Coopers & Lybrand study of the top executives at 428 such firms.

But the survey indicates that small-company CEOs may be more technically savvy than their brethren at larger companies. Coopers found that more than two-thirds of the CEOs use a computer to track information. And by a nearly two-to-one margin, those CEOs prefer using a desktop computer to a laptop or notebook to track data.

The 428 firms, Coopers says, were identified in the media as the fastest-growing U.S. businesses over the past five years.

"A large majority of the CEOs are becoming technically literate," says David Grand, a Coopers partner who specializes in fast-growing, high-tech companies. "I think they're being forced to."

Brian Brumit, a director in the professional services firm's advisory business services division, says PCs are the "primary driver" in harnessing data for those companies.

Grand says it's important for a CEO to meet with his or her top IS manager and evaluate the "critical" data the CEO needs to run the business — and to have the data easily accessible.

— Rick Saia

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But hurry, because in business these days, it's survival of the fastest.



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Buyer's Guide

PLAYING WITH PLUG-INS

BY ROSS M. GREENBERG

A plethora of browser plug-ins is available to help you tap the Internet's wealth of multimedia options, including video, sound and virtual reality. Equipping your home page with multimedia data that requires a plug-in in order to be viewed can give it an extra zing. But there is a downside: Some plug-ins are difficult to install and use and may force surfers to wait. Plug-ins are mini-applications designed to supplement your browser. But some plug-ins have ballooned into entire applications with mini-operating systems and programming languages that require users to wait and wait while they download and set up a required plug-in.

The list of plug-ins is growing. Twelve are featured here, but there are more than 100 available. Using the catalogs of plug-ins available at www.browserwatch.com and www.stroud.com, among other sources, we singled out plug-ins we considered worthy of notice for corporate users. They have been separated into two categories:



GOTTA-HAVE PLUG-INS — ones you'll need as you surf the World Wide Web, because you'll run into pages that require them or because your own home page will benefit from their use; and **WANNA-HAVE PLUG-INS** — ones that will make your browsing easier, or at least more enjoyable, but aren't essential.



Unless otherwise noted, plug-ins are compatible with both Netscape Communications Corp.'s Navigator plug-ins and Microsoft Corp.'s ActiveX controls.

Plug-ins, page 82

TECH NOTE: Netscape plug-ins are specially constructed Dynamic Link Libraries that reside in the programs/plug-ins directory of your Netscape folder. You can find out which plug-ins you've already installed in Netscape by clicking on Netscape's Help and About Plug-ins menu items. A plug-in can call any program on your disk, so it can be as destructive or malicious as a virus or Trojan program. Make sure you know who is giving you the plug-in.

Microsoft's Internet Explorer plug-ins are ActiveX controls, or files that end with an .OCX extension. They can reside anywhere on your disk but tend to be in the Windows directory or one of its subdirectories. It is easy for ActiveX developers to authenticate their control so you know exactly who wrote it and that what you got is exactly what they wanted you to get. That verification is one of the advantages of ActiveX controls; other plug-ins can't be automatically authenticated before installation. Don't run unauthenticated ActiveX controls unless you know the source of the control well enough to entrust them with the well-being of your data.

PLAYING WITH PLUG-INS

GOTTA-HAVES

CONTINUED FROM PAGE 81

PLUG-IN: ScriptActive

COMPANY: NCompass Labs, Inc.
WEB SITE: *www.ncompasslabs.com*
PLUG-IN LOWDOWN: Allows Navigator to run ActiveX controls, which previously were reserved for Internet Explorer.
PROS: You are no longer tied to Internet Explorer for cool ActiveX stuff.
CONS: You can never be immediately up to date with a change in Internet Explorer; some pages may not work correctly without conversion.
PRICE: Free.



TIRED OF PLAYING the Internet Explorer vs. Navigator game? But you really like those cool ActiveX controls your buddy in the next cubicle runs? Well, download the ScriptActive plug-in now. Make sure you take a look at Microsoft's ActiveX gallery. On it, you'll find some NCompass examples of pages using ActiveX controls that let Navigator work like a champ — but only when this plug-in is loaded. Unfortunately, you'll also find that controls on some pages simply don't work yet because page designers didn't properly install the required HyperText Markup Language (HTML) tags for ActiveX. NCompass produces a debugging tool and conversion program for those pages.

PLUG-IN: Carbon Copy Net

COMPANY: Microcom, Inc.
WEB SITE: *www.microcom.com*
PLUG-IN LOWDOWN: Allows remote control and buddy system of a remote machine also running the plug-in.
PROS: Great for technical support, remote problem solving and training.
CONS: Bandwidth problem, because graphics must be sent from slave system to master system, which can be slow on a slow modem connection.
PRICE: Free five-minute evaluation. Purchase: About $60.



AVAILABLE FOR BOTH Internet Explorer and Navigator, Carbon Copy plug-ins make it easy for you to manipulate and manage a remote browser. The free plug-in is restricted to running within your browser window, but it allows full access to the remote machine. It's so transparent that you can do dangerous things, as shown by the number of hackers trying to crash Microcom's demonstration sites. But there's adequate security available in the plug-in, and it's easy to install and use. Using dial-up networking remotely through Carbon Copy is an eerie experience. Try it, and you'll be hooked. I had some problems with the remote machine, which was seemingly stuck in a screen full of logos at times, but that happened only when connecting to Microcom servers during the evaluation period. You get only a few minutes to experiment with the free version, though.

WANNA-HAVES

PLUG-IN: Clear Video/Clear Fusion

COMPANY: Iterated Systems, Inc.
WEB SITE: *www.iterated.com*
PLUG-IN LOWDOWN: Enables supercompressed video files playing on a streaming basis for unusually speedy download.
PROS: The compression ratio makes videos, even QuickTime files, small enough to download painlessly. Adds quality video to your site.
CONS: There aren't that many sites using the compression/decompression (Codec) technology you need to take advantage of it yet.
PRICE: Client plug-in is free. Encoder costs $395.



ASK ANYBODY WHAT THEY HATE most about the Internet, and there's a good chance they'll say they hate to wait when they hit a link to a great video. Likely, when they see the video taking up a megabyte or so, they avoid it. Now that wait can be over with the amazing Codec technology inherent in Iterated Systems' Clear Video, especially when combined with Clear Fusion's streaming capabilities that start playing the video when you click on an .AVI video file. One example Iterated provides showed a 152M-byte "raw" video working flawlessly when compressed to a mere 800K bytes. The installation package includes a plug-in for putting Iterated's technology onto QuickTime .MOV files; if you've avoided getting QuickTime, your excuses are now null and void.

PLUG-IN: QuickView Plus

COMPANY: Inso, Inc.
WEB SITE: *www.inso.com*
PLUG-IN LOWDOWN: View data files in their native format without having the application. Print them, too.
PROS: Very effective set of plug-ins for viewing virtually any file; great for file transfer protocol downloads and for sending out read-only documents.
CONS: Each of several QuickView Plus plug-ins is loaded when you start Netscape, which slows down initial loading. Not every viewer you might need is available.
PRICE: 30 days free, then $60.



YOU ALREADY HAVE QUICKVIEW on your machine: It comes pre-installed with Windows 95. Select a file, right-click on it, and you'll see QuickView. Its big brother, QuickView Plus, has more viewers for more file formats generated by more applications. With it you can view files such as CorelDraw .CDR files, even if you don't have Corel. The plug-ins handle about 200 formats. For Netscape fans, each viewer has its own plug-in; a single module can contain multiple viewers. Each plug-in must be loaded and initialized as Netscape starts, so if you never noticed Netscape showing you a message that said "loading plug-ins," you will after you install QuickView Plus and wait an annoying extra few seconds. That problem doesn't exist with Internet Explorer: A single ActiveX control gets loaded and processes files as required.

PLUG-IN: Ichat

COMPANY: Ichat, Inc.
WEB SITE: *www.ichat.com*
PLUG-IN LOWDOWN: Provides a full Internet Relay Chat (IRC) client within a browser, using public or private servers.
PROS: Chat capabilities can exist natively on your Web page for technical support and company "events."
CONS: Public chats can be quite a time sink, and IRCs are never an efficient means of communication.
PRICE: Client plug-in is free. Ichat rooms costs $40 per simultaneous user.

IRC IS AN EFFECTIVE, albeit not terribly efficient, means of communicating to either a small group of people, perhaps working in collaboration on a project or with a large group that needs to experience a corporate event. The Ichat server software is fully scalable. Its price is based on how many simultaneous users can be supported: America Online used Ichat for a 17,000-member chat with Michael Jackson. Providing moderated chats for technical support and for real-time announcements about your Web page is cool these days. Because the client is free, test their public server to see what IRC is like — it might be something your users need and might give them a sense of community.



PLUG-IN: Acrobat Reader

COMPANY: Adobe Systems, Inc.
WEB SITE: *www.adobe.com*
PLUG-IN LOWDOWN: Display popular, rich .PDF documents in the browser in this streaming display plug-in.
PROS: For consumers, .PDF files are springing forth all over. This plug-in lets you read them. For producers, Acrobat allows for the creation of some magnificent functional documents.
CONS: .PDF documents are big, and therefore, generally slow to download.
PRICE: Client plug-in is free. Stand-alone editor is $295 (site licenses available).

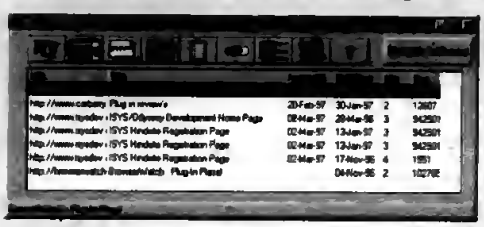


PLATFORM INDEPENDENCE is the Holy Grail of computing. With the Web's HTML and style sheets, it's getting closer. But nothing on the Web could look exactly like your Word document laden with hyperlinks, graphics and different fonts until Adobe's Acrobat Reader showed up. This free plug-in appears to have seamless integration to the full reader application and can compose those spiffy documents. There's an ActiveX control, too. The reader is greedy for CPU cycles once its streaming ability kicks in; it isn't a particularly well-behaved Windows 95 application — it doesn't appear to relinquish control often enough. Your browser — your system actually — will appear sluggish during download. Because .PDF files tend to be large, that might annoy you. But the quality of the downloaded and displayed document will astound you.

PLUG-IN: Hindsite

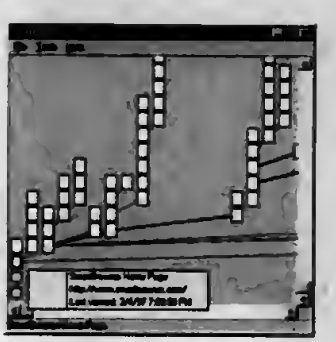
COMPANY: ISYS/Odyssey Development, Inc.
WEB SITE: *www.isysdev.com*
PLUG-IN LOWDOWN: Indexes the full content of each page visited then gives an easy query agent for fast lookups.
PROS: Very useful for Web surfers who need to visit several sites previously visited but not bookmarked.
CONS: None.
PRICE: 90-day free evaluation, then $40.

WE'VE ALL HAD the "Ah-ha!" experience of discovering something that uncomplicates your life dramatically. Add another one to the list with ISYS' Hindsite plug-in/program. Using the simple idea that your browser's cache already has all the pages you've visited for speedy access, Hindsite takes advantage of that and indexes everything on each visited page. It then gives an intelligent query agent to quickly search that index with Boolean logic, if desired. As your cache fills — and immediately before a page drops out to be replaced with another fresh page — the soon-to-be-flushed page is automatically added to Hindsite's index. Unobtrusive but ever vigilant, the index doesn't grow too large. And because it's local, it's faster than a speeding bullet. Using Hindsite could easily make Add Bookmark a thing of the past. For a user who does a lot of Web surfing, this plug-in is more than just an option.



PLUG-IN: History Tree

COMPANY: SmartBrowser Corp.
WEB SITE: *www.smartbrowser.com*
PLUG-IN LOWDOWN: Presents a graphical representation of all sites visited in a tree format, showing temporal relationships and links.
PROS: Eases use of the Web; in essence, a point-and-click interface to all sites visited.
CONS: None.
PRICE: $10 (shareware).



START OFF AT ONE SITE, and a half-dozen clicks later you're someplace you never dreamed existed. It's the right site, but you saw some interesting sites along the way. How did you get there, anyway? If you're using History Tree, that needn't be a worry. Each site you visit will have its uniform resource locator (URL) stored in a graphical tree, with the relationship of your visit to each site shown for you to visualize. As you pass your cursor over a member of the tree, its URL, last date and time you visited and the title (if any) of the page will pop up. Click on a leaf of the tree and your browser takes you there. You can even do a thumbnail screen capture to pop up as you look over the landscape you've blazed. History Tree is unobtrusive, powerful and simple to use — five minutes after you start using it, you'll be wondering how you ever lived without it.

Plug-Ins, page 85

Have You Gathered Mountains of Data?

On April 21, Learn How to Turn that Data into Knowledge at the

Data Mining Face-Off

Fairmont Hotel in San Francisco, CA
April 21, 1997

If you're a CEO, CFO, CIO, or Senior IS professional, or if you need the process of data mining demystified, plan to attend this full-day event. Learn how to predict future trends and customer behaviors by manipulating data. Learn about the newest tools available in data mining today.

What's Different About This Seminar?
The format. It's a face-off, an interactive discussion between vendors...and YOU. Data mining experts from DataMind Corp., HyperParallel, IBM, NCR Corp. and Torrent Systems—the big guys and the little guys—will present responses to the same RFPs so you can see how different vendors approach and solve the same problem.Then the fun part begins...discussion, debate, audience participation. At the Data Mining Solutions exhibits, you'll have a chance to talk one-on-one with these vendors about your organization's particular challenges.

Presenters
Data mining experts from the leading vendors in the industry present solutions to today's complex business challenges in a comparative setting that promises to deliver real answers to real business problems. While RFPs in both the retail and finance industries are the focus of the presentations, these experts will entertain questions from the audience as well as each other to make this day a lively, interactive experience.

Accommodations
Reserve a room at the Fairmont Hotel and benefit from a reduced group rate. Just mention the TBI Data Mining Face-Off when you call **800-527-4727** for reservations and information.

Register Today
Don't delay in registering for this exciting full-day event on data mining solutions. The event fee is $150, and $125 for each additional attendee, payable by check, money order, VISA, MasterCard or American Express. Fax your registration with credit card information to 201-573-9191. Mail your registration with money order or check payable to Technology & Business Integrators, to TBI, 50 Tice Boulevard, Woodcliff Lake, NJ 07675. If you have questions, or prefer to register by phone, please call 800-676-9470, ext 11.



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70. Communications Systems/Public Utilities/Transportation
80. Mining/Construction/Petroleum/Refining/Agriculture
90. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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99. Other _____ (Please Specify)

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21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
80. Sys. Integrators/VARs/ Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
30. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Dev.Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/ development tools

5. Do you use the Internet?
☐ Yes ☐ No

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90. Manufacturer of Computers, Computer-Related Systems or Peripherals
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70. Communications Systems/Public Utilities/Transportation
80. Mining/Construction/Petroleum/Refining/Agriculture
90. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
95. Computer/Peripheral Dealer/Dist./ Retailer
99. Other _____ (Please Specify)

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OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
85. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
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PLAYING WITH PLUG-INS

GOTTA-HAVES

CONTINUED FROM PAGE 83

PLUG-IN: RealPlayer

COMPANY: Progressive Networks
WEB SITE: *www.real.com*
PLUG-IN LOWDOWN: Provides the ability to stream video and audio on your browser.
PROS: Great for presentation video and/or audio publicity on your Web page.



CONS: Canned audio or video presentations can be a hefty download, are bad for server bandwidth and expensive when producing quality audio and video promotionals.
PRICE: Client plug-in is free. Server for live audio/video starts at $600 for five users.

STREAMING VIDEO has been added to streaming audio in Progressive Networks' RealPlayer plug-in. That means nearly immediate sight and sound as soon as a URL is clicked, even on a large multimegabyte .AVI file. The demonstrations available on the company's home page include three short films by Spike Lee, which gives you an idea of what can be accomplished. With the advent of this technology, I can see companies announcing the equivalent of blue-light specials for their customers.

PLUG-IN: Shockwave

COMPANY: Macromedia, Inc.
WEB SITE: *www.macromedia.com*
PLUG-IN LOWDOWN: Shockwave files are usually active pages that this plug-in will display and play.
PROS: Shockwaved pages let you display active pages that can go considerably beyond normal HTML in functionality and appearance.
CONS: The plug-in is large. Surfers might bypass your page rather than take the time to download the plug-in.
PRICE: Client plug-in is free.



ALONG WITH THE SERIOUS BUSINESS uses for this plug-in, which lets you create some stunning and functional Web pages, there's the amusing uses. Try to save the White House from Godzilla or play professional-level Whack-A-Mole. Both are staff picks from Macromedia's Shockwave Gallery. The Reader/Viewer is a freebie, but the ability to create "Shocked" pages requires pretty sophisticated — and expensive — software. Invest your time and download the plug-in and/or the control. What you'll get back immediately is the ability to display CD-quality streaming audio and vector graphics. □

WANNA-HAVES

PLUG-IN: Flash *(formerly FutureSplash)*

COMPANY: Macromedia, Inc. *(formerly FutureWave)*
WEB SITE: *www.macromedia.com*
PLUG-IN LOWDOWN: Plays .SPL (Splash) "smart" animated files with full streaming vector graphics. Surprisingly fast and small.
PROS: Very small player (80K); great for both Internet Explorer and Netscape and makes viewing stunning graphics easy and painless.
CONS: None.
PRICE: Free. Editor costs $249.

FLASH'S PLUG-IN allows shockingly fast, surprisingly small and amazingly functional files to be part of your Web page. You get pages that can do stuff such as active buttons that let different actions take place when your mouse cursor is away from, near or clicked on the button. The plug-in is free; the package to create the Splash pages is available for a 30-day evaluation from the company's home page.



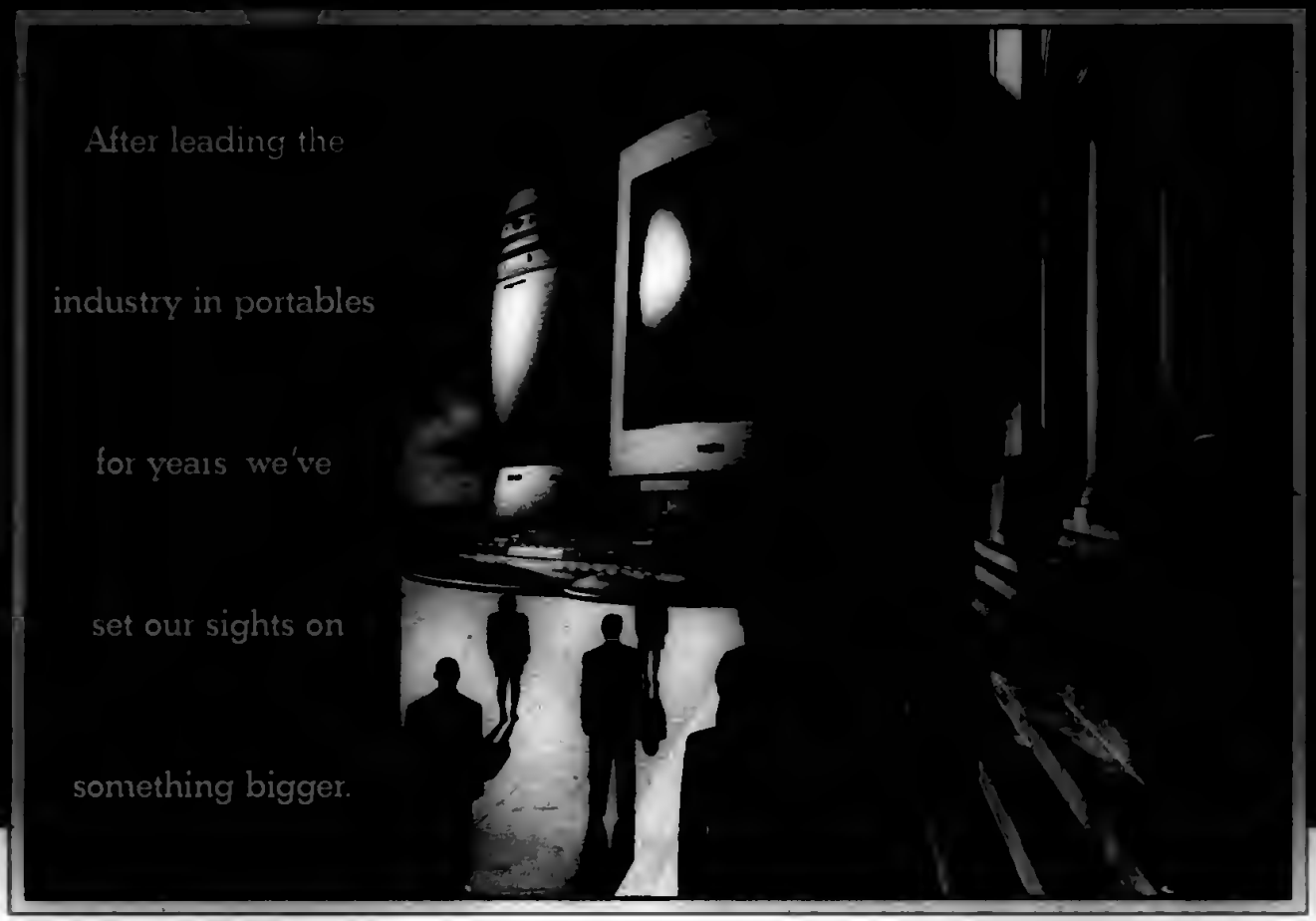
PLUG-IN: VoxChat and ToolVox

COMPANY: Voxware, Inc.
WEB SITE: *www.voxware.com*
PLUG-IN LOWDOWN: VoxChat is an Internet telephony product that provides for voice chats among multiple simultaneous users. ToolVox is a voice component tool box suitable for Web pages.
PROS: Brings Internet telephony up to the level of party-line-style conferencing. Great for technical support or collaboration. VoxChat provides capabilities unheard of before in voice-on-the-Web technology.
CONS: "Press to Talk" technology feels backward.
PRICE: VoxChat is in beta (server will likely be priced on per-user basis).



VOXCHAT ENTERED BETA the first week in March. It's not ready for prime time, but it's certainly a comer and definitely a keeper. It's sorta cool. After downloading the plug-in, a single HTML line in a Web page will cause a voice chat system to pop up, with optional private rooms. Up to four people are able to participate in an intercom-like way. Currently using Voxware servers, it's probable that the server software will be for sale soon. Even more smashing is Voxware's ToolVox: a set of plug-in tools easily accessible from your Web page and controllable by simple JavaScript commands. Download ToolVox, install it and hear John Kennedy's famous "Ask not" speech in a 78K-byte file. That's about four minutes of a most powerful speech, downloadable in only half a minute. That's a helluva Codec. □

Greenberg is a reviewer and developer in New Kingston, N.Y.



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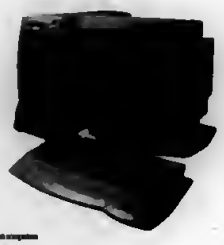
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In Depth

SEARCH AND RESCUE



The original Computer Emergency Response Team: part SWAT team, part therapist

Late on a rainy Friday afternoon, just as the technical staff at the CERT Coordination Center is getting ready for the weekend, the hot line rings. It's a systems administrator at a hospital who suspects a virus attack in progress.

In a flash, the atmosphere in the Computer Emergency Response Team's (CERT) locked-down offices turns from jovial to deadly serious.

"That's a life-threatening situation. We drop everything else right then," says Kathy Fithen, manager of this CERT's daily operations and also its captain. "As soon as we hear it's a medical facility, we know people's lives could be at risk, so we respond."

For the next four hours, CERT works to identify the virus, determine the damage and get the hospital in recovery mode. One person stays on the telephone with the hospital. One logs on to the World Wide Web, looking for information and tools. Another hits the phones, calling colleagues at myriad virus associations and help desks.

The hospital initially suspects the virus has attacked only one server, but the team discovers the virus is actually altering and deleting files on several servers at related health care centers in different cities.

By Leslie Goff

"You never know when something big will explode into something much bigger," Fithen says. "That's part of the stress."

Search and rescue, page 88

SEARCH AND RESCUE

CONTINUED FROM PAGE 87

Housed in the glass-and-chrome Software Engineering Institute at Carnegie Mellon University in the Oakland section of Pittsburgh, the CERT Coordination Center is the granddaddy of all CERTs. Its hot line is the outgrowth of a 1988 move by the U.S. Defense Advanced Research Projects Agency to put a single centralized team in charge of monitoring Internet security.

Incident reports have ballooned since then, from roughly 400 the first year to 2,300 last year, and some 50 other CERTs have emerged worldwide.

Fithen's crew members are fixed on the day when they put themselves out of a job — when Internet and corporate network security are so robust the CERT won't be necessary.

Ask them when that day will come, however, and they laugh giddily.

Gallows humor is how team members deal with high-stress jobs that they never leave far behind. The stress is so high, in fact, that the seven people on the team comprise the equivalent of only five full-time hot-line workers. They rotate through periods of administrative, research and education responsibilities to avoid the burnout that would inevitably come from constantly handling calls.

The team fielded 2,062 hot-line calls last year. It responded to incidents involving thousands of hosts that ranged from plain-vanilla break-ins to root system compromises to attacks on the Internet infrastructure, which receive top priority along with life-threatening incidents. Last year's calls were down significantly from the hot line's peak of 3,664 calls in 1994. But reported incidents rose to 2,573 last year from 2,341.

"Fewer intruders are succeeding, but the number of attempts is increasing," says Mark Zajicek, a member of CERT's technical staff. "Even if only 10% to 20% of the attempts succeed, that's a lot."

THE SORROW AND THE PITY

The team gets the hospital on the path to recovery within four hours, largely because the virus is well-known, so tools are available online to cure it and restore operations. That underscores the frustration — and irony — of their jobs: While there are known preventions for the overwhelming majority of the breaches that prompt hot-line calls, information systems managers and systems administrators often are unaware of them.

For example, it's been widely known for at least a year that Common Gateway Interface scripts — which are used at Web sites to support features such as ordering forms and surveys — can be easily exploited. But the CERT Coordination Center continues to hear from users who were compromised because of them.

Similarly, sendmail, the Unix message-routing software that is common on the Web, is known to be extremely vulnerable. Nevertheless, Zajicek recently saw a Web site that proudly described its entire software infrastructure — including a notoriously buggy version of sendmail. "That's like saying to an intruder, 'Don't go over there, the money's over here,'" he says.

THE CERT QUANDARY

The conflict between the responsibility to report known security hazards and the reticence to place information in the wrong hands constantly gnaws at those in the CERT program.

While team members are interested in creating a public dialogue about known vulnerabilities and preventive measures, they are loath to speak of them in detail. For example, the team posted a sendmail advisory on Jan. 28 only after incident reports had been streaming in for some time.

The CERT Coordination Center's Vulnerability Reporting unit methodically decides which advisories to release and when, using a spreadsheet that balances the public good with intruders' interests. The team painstakingly crafts advisories to be useful without revealing clues that would aid attackers. The advisories are cross-referenced and linked at myriad Web and file transfer protocol sites on the Internet. Patches are available for each posted vulnerability.

Despite all the CERT's deliberation, caution and thoroughness, the warnings go unheeded. Buggy software remains unchanged by IS and vendors alike.

This is frustrating but not surprising, CERT staffers say. They say today's systems administrators are novices in an arena that's expanding faster and in more directions simultaneously than any technology in history.

Under pressure from senior management to get on the Web, systems administrators routinely add software and hardware to their networks that create ideal entry points for intruders. Given the plug-and-play aspects of distributed computing, users forge ahead with blind faith that vendors have incorporated built-in security.

"The 'net is crawling into so many areas of our lives," says Georgia Killcrece, a CERT technical staffer. "There's this population of users who just aren't security-aware." Zajicek agrees. Every day, he says, when he reads electronic mail, "I'll get that 'oh no' feeling in the pit of my stomach. Because we've dealt with the same problem so many times, you can actually predict how things will go before you speak to the site."

"You never know when something big will explode into something much bigger." – Kathy Fithen, CERT Coordination Center

HIT PARADE



CERT Coordination Center
Pittsburgh
(412) 268-7090
www.cert.org

In its annual report, the CERT Coordination Center outlines the problems it saw most frequently last year. "Unfortunately," the report states, "we continue to see the same problems in 1997."

Here are some recent favorites:

cgi-bin/phf. Hackers snare password files through a vulnerability in the phf cgi-bin script. Last year, attackers usually went bobbing for the server's /etc/passwd file, CERT reports. Sample scripts used to execute this con are widely available on the Internet. Word is spreading, the report adds, and many attacks now fail because sites have removed the phf program. Naturally, though, the hack is "still being widely attempted."

Linux. "We saw an increase this year in break-ins and root compromises of Linux machines," CERT reports. Most intrusions were achieved through long-known and well-documented vulnerabilities.

Denial-of-service attacks. The Web is teeming with how-to manuals on executing denial-of-service attacks, complete with scripts. That may help explain why such attacks grew in popularity last year.

Hackers create "TCP half-open connections," CERT reports, through Internet Protocol spoofing. The data structure of the victim's server fills up, and the system stops accepting new, incoming connections.

If your taste runs to oldies, here are some common invasions that date back to at least 1995 and show no signs of letting up: "attacks on known vulnerabilities," packet-sniffers that collect account names and passwords, IP spoofing and, of course, sendmail attacks (see story above).

Repeat callers are the most disconcerting, the team says. After all the work the CERT puts in to an incident, many users still don't follow through.

Fithen recalls the following example: CERT had advised an Internet service provider that had been compromised to take its server off the network, determine what changes the intruder had made, restore files and assign new passwords. The service provider complied for the most part — but left the server connected. Internet service providers "always say their server is too critical to take down," Fithen explains. "But if you don't, you don't know if the intruder is still doing damage while you're making the fixes."

The punch line is predictable: "Of course, they called back," Fithen says. "Now everything had been deleted. The problem was a lot worse than it had been before."

PIPE DREAM?

Outside, cold rain turns to icy snow. Things are slow. Several team members wander to the glass-enclosed lunchroom for coffee. They sit in the otherwise-deserted room and shoot the breeze.

"Every job has its frustrating times," says Larry Rogers, who researches and writes advisories for the Vulnerability Reporting unit. "We like to envision software developers doing more with the information that's available. And we hope that by educating users, we'll eventually put ourselves out of a job."

"That's pie in the sky," Fithen says.

"You've got to have a goal," Rogers responds, smiling. □

Goff is a freelance writer in New York.

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PARTING THOUGHTS



When information systems managers leave the exit interviews to HR, they may lose their chance to gain valuable departmental insight: Why not pick the brain of a departing employee? / BY JILL VITIELLO

IS: "Got to know!"

A FEW WEEKS AGO, Terry Hornbaker did something few information systems managers would do. He conducted an exit interview.

Hornbaker, director of reservations technology at Southwest Airlines in Dallas, says he views the process as a chance to get some straight talk from a departing IS professional. After all, people are more likely to discuss their real feelings openly as they sever their ties with the company. And he wants the information firsthand.

"I want to find out the reason for an employee leaving," Hornbaker says. "Usually it falls into three areas: money, technology and opportunity." How the employee answers tells Hornbaker whether there is a chance to change his/her mind. "When people resign for money or technology reasons, they're gone. If they're leaving because of a people issue or a responsibility issue, we look for ways to make them stay, possibly by providing new opportunities," he says.

Questions about access to new technology, methodology, project management and training opportunities may prompt the departing IS staffer to provide useful insights that Hornbaker might not otherwise discover.

Too often, it's the IS manager who misses an opportunity. Unless they conduct the exit interview themselves or work closely with human resources to develop IS-specific questions for the interview, IS managers may never gain actionable insights into what it's really like to work in the department.

When IS managers leave the exit interview process entirely to the HR department, they're likely to get feedback on company policies and procedures. But they can expect little information that has a direct bearing on daily IS decision-making or long-term technology strategy.

By running the exit interviews himself, Hornbaker says he gets to ask questions that help him uncover communication and leadership issues.

Hornbaker has conducted about a dozen exit interviews during the past year, and he has convinced three employees to stay. He also shares the information he gathers from exiting employees with the HR department, which handles other formalities of employees' departures.

But be warned: Experts advise IS managers who have terminated employees not to conduct those exit interviews themselves. Instead, leave that to the HR department, which can better create an atmosphere of objectivity.

HR: "Trust me!"

When IS managers work with HR employees that conduct exit interviews, they often get candid insights into the culture of their IS departments.

"The benefit of having human resources people doing exit interviews is that they represent an objective third party who is not the manager," says Dana Milner, a principal at Dana Milner & Associates in Fort Collins, Colo. Many IS managers concur with that view.

"If line management were involved with the exit interview, you wouldn't get open and honest answers," says John Anderson, vice president of telecommunications and computing services at APL Ltd., a cargo transportation company in Oakland, Calif.

IS employees who leave APL meet with Stephanie Rundin, manager of HR systems, before they go. Rundin collects information from the exit interviews and looks for trends in departing employees' responses. Then she creates written reports and gives them to direct supervisors and every manager up the chain of command, right to the chief information officer.

"When people leave our company, they know up front who the information will be distributed to," Rundin says. "If they ask me to keep certain responses off the record, I honor their wishes for confidentiality on those matters."

Departing employees at APL may review the exit-interview report upon request. For some companies, conventional exit interviews are too time-consuming, but the information they yield is valued. Those companies find other ways to get it.

"The exit interview is more effective a few weeks after people have left," says Alan Bignall, vice president of systems development at American Express Financial Advisors. Bignall says the time lapse provided by offering a survey instead of an in-person interview before an employee leaves eases the pressure and can elicit more candid and thoughtful answers.

Beyond the usual reasons for accepting another job, such as money and opportunity, employees cite others, Milner says. Employees relocate, trail a spouse who has been offered a new job or retire.

For an employee who is fired, participating in an exit interview can be especially important to ensure that the employee's point of view is included in the personnel file. □

Vitiello is a freelance writer in East Brunswick, N.J.

Get more value from the exit interview

1 [illegible]

2 Inquire about the company's reputation. Ask the exiting employee what they have heard about the company. Is it considered a good place to work? Is it responsive to employees' needs? How does the company's image compare to that of its competitors? Is it perceived as a technology leader or a laggard?

DASH for the CASH

Rising salary offers are creating mobility in the AS/400 workforce. But more men than women are going for the gold.

BY STEVE ALEXANDER

Almost anyone who has AS/400 skills is highly employable these days, but men are likely to be paid more for reasons that appear linked to gender rather than experience or education.

A new national AS/400 compensation survey indicates that women in AS/400, or midrange, shops tend to earn less, apparently because they are less willing to change jobs to obtain higher salaries.

Because of hiring shortages, salaries for all AS/400 professionals have continued to rise steadily. Annual raises average 5.7% for programmer/analysts and 7.7% for managers, says Nate Viall, president of Nate Viall & Associates, a consulting firm in Des Moines, Iowa.

Demand for AS/400 professionals is extremely strong in virtually all metropolitan areas, he says.

"Salaries are much higher now than they were even a year ago. And we just don't see any signs that it's getting anything but worse [for employers]," says Marc Cohn, senior vice president at Enterprise Rent-A-Car in St. Louis. "We've had to step up to the higher salary structure. The last thing we want is to lose good people over compensation."

Cohn says Enterprise hopes to hire about 65 AS/400 professionals this year compared with about 80 last year.

For the first time since Viall began studying AS/400 salaries several years ago, a salary gap has emerged that can be attributed specifically to gender, he says. Viall's survey is the largest one specific to the AS/400 sector.

Previously, when male IS professionals earned more than female IS professionals for various job positions, the differences usually could be explained by differences in experience and education.

But even taking those factors into account, Viall says there is a national gender gap in the AS/400 field. Men earn an average of $1,500 to $2,000 per year more than women. Gender gap salary differences were previously limited to the rural South, Viall says.

He attributes the AS/400 gender gap to the greater willingness — or ability — of male IS professionals to relocate for a higher salary. "In a rapidly rising market, a lot more males are taking advantage of the higher salaries being offered for people changing jobs," Viall says.

Carolyn Farris, a computer operations supervisor at Jimmy Dean Foods in Cordova, Tenn., says men command higher salaries than women in the AS/400 field. But the reason, she says, is that "a lot of managers think men are breadwinners and that they require more money than women, which is not true."

Farris says even if men are paid more because they change jobs more often, it isn't justified. "That's no excuse for paying a stable employee, who works just as hard as a man, a lower salary," she says.

Many IS hiring managers say they haven't seen any pay differences that can be attributed to gender alone. Some say men are more likely than women to change jobs. "We get men who are interested in relocating their professional careers. Most women we get [want to move] here because their husbands found jobs in this area. I don't see that many women taking the lead in relocating," Cohn says.

"The truth is that women do not move as much," says Warren Fristensky, vice president of information technology and chief information officer at John Wiley & Sons, Inc. in Somerset, N.J., a publisher of technical books and journals. "They have children, they get married, or their husbands or significant others keep them in one location."

The gender gap varies by region. In December and January, a region that includes Minnesota, Wisconsin, Iowa, North Dakota and South Dakota had a $2,100 gender gap for AS/400 programmers but none for AS/400 managers. For the same period, a region that includes Kansas, Missouri and Illinois reported no gender gap surrounding AS/400 salaries, Viall says.

The shortage also is creating higher salaries for less experience. A survey that Viall took last fall found that 20% of programmers who had five to six years' experience earned $50,000 or more per year — a pay level that a few months ago had required seven to eight years experience.

Richard Kolbe, director of information services at Harley-Davidson, Inc. in Milwaukee, asays, "Starting salaries in the Milwaukee area are now in the low to mid-$30,000s. That used to be the salary for more experienced people." □

Alexander is a freelance writer in Edina, Minn.

MONEY FOR THE MASSES

AS/400 salaries are increasing the most at the lower job levels

POSITION	1996 SALARY	1997 SALARY	INCREASE
Vice president, CIO	$101,900	$105,700	4%
MIS director	$79,800	$82,200	3%
Data processing manager	$54,700	$58,500	7%
Programmer/analyst (five to six years experience)	$40,200	$42,600	6%
Programmer/analyst (one to two years experience)	$31,500	$34,500	10%
Entry-level programmer/analyst (four-year degree)	$30,000	$33,200	11%

Source: Annual AS/400 Salary Survey by Nate Viall & Associates, Des Moines, Iowa





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TECHNICAL CONSULTANT. Under the direction of technical services manager responsible for design analysis, development, implementation, creation of test criteria and testing, and training of client/server applications using the operating systems of IBM AIX, DOS, UNIX, and Windows. Use of Graphical User Interface. Strong working knowledge of client/server development tools such as Powerbuilder, Powertool, C, C++, SQL and Visual Basic as well as database development tools such as Oracle 6.0 and 7.0, Watcom and Access. Candidate must be able to create Deployment Kits for client/server applications being created. Hardware platform experience required includes Personal Computers, DEC VAX, Hewlett Packard, and RS 6000. Masters Degree in computer engineering required. Minimum 10 months experience as consultant, software consultant, and/or programmer $50,000/yr., 40 hours/week. Qualified U.S. workers are encouraged to apply for this/these position(s). Two resumes to Mike Brooks, Jobs, Employment and Training Services (JETS), 201 E. Washington Avenue, Rm. 211X, Madison, WI 53707. Refer to case# 960283 on resume.

AS400 Positions

Dahlberg, Inc., a Bausch & Lomb company, and maker of Miracle-Ear hearing aids has the following AS400 positions available:

Project Manager

Lead cross functional teams to develop business solutions through applications & systems.

Sr. & Intermediate Programmer/Analysts

Design, program, test, implement & maintain software applications to meet customer needs. Qualifications: RPG, MacPac, Client/Server development helpful. Send resume & salary requirements to Dahlberg, Inc., 4101 Dahlberg Drive, Golden Valley, MN 55422. Attn: HR PS. EOE.

Programmer-Participate in the installation and refinement of company product (Legatar for Windows) using Visual Basic 4.0/5.0, Access 8.0 and Crystal Reports 5.0. Develop help documentation using Doc-To-Help software. Associate Degree in Computer Science required. 1 year in job required. Experience must have included programming in Visual Basic/Access/Crystal. Must be willing to travel in the U.S. 10% of year. 40hrs./wk. M-F 8a.m.-5p.m.. No overtime. $40,000/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Ron Clohan, President, Dayster Computer Systems, Inc., 222 South Riverside Plaza, Suite 2360, Chicago, Illinois 60606.

Programmer Analyst - Plan, develop, test & document computer programs applying principles of programming techniques & computer systems; evaluate user request for new or modified program to determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with user to identify current operating procedures & clarify program objectives, formulate plan outlining steps required to develop program, using structured analysis & design, convert project specifications, using flowcharts & diagrams, into sequence of detailed instructions & logical steps for coding into language processible by computer; & use IBM 3090, DB2, CICS, EDI, IDMS & COBOL II; Reqs: Bachelor's in Computer Science, Systems Analyses, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in ed. & exp. & 1 yr. exp. in the job offered or 1 yr. exp. in a related occup. as a Consultant, Programmer, Programmer Analyst, Senior Programmer Analyst, Systems Analyst, Software Engineer or Graduate Assistant. Will accept 3 yrs. college ed. plus 3 years exp. in the job offered or in a related occup. in lieu of the required ed. & exp. The exp. in the job offered or related occup. must have included 6 mths. using each of the following: IBM 3090, DB2, CICS, EDI, IDMS & COBOL II. $43,500/yr. 40 hrs/wk, M-F, 8a-5p. Send resume to 7310 Woodward Avenue, Room 415, Detroit, MI 48202. Include Ref #1500869. Employer Paid Ad.

SAP Consultant - 40hrs/week, 8am-5pm, $74,000/year. Consult with client to determine system's specifications. Analyze, design, develop, implement, and code systems utilizing SAP R/2 & R/3 software on UNIX Operating System with Cisco Router Configuration. Test and adjust system to meet customer requests. Update systems and applications. Requires bachelor's degree in computer science and two years experience in the job offered. Westchester area. Send 2 copies of both resume & cover letter to: Illinois Department of Employment Security, 401 South State Street -3 South, Chicago Illinois 60605. Attention: Janet Aschenbrenner, Reference #V-IL 16844-A. NO CALLS. An employer paid ad.

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Support computer applications with user community; IDX, decision support, laboratory systems and PeopleSoft experience. **Job Code CW/91b/M0479**

Network Administrators

Install, configure and troubleshoot large, multi-site network; experience in network administration and use of network management tools. **Job Code CW/91a/M5568**

Please send your resume, indicating appropriate Job Code, to Partners HealthCare System, Inc., 101 Merrimac Street, 5th floor, Mail Code M01518, Boston, MA 02114-4719; Fax: (617) 724-2266. We are actively seeking to increase the diversity of our workforce. EOE/AA.

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Partners HealthCare System includes Massachusetts General Hospital, Brigham and Women's Hospital, The North Shore Medical Center and the community-based doctors and hospitals of Partners Community HealthCare, Inc.

Project Leader to be involved in analysis, design, planning and management for development and implementation of multiple mainframe-based back-end applications for financial brokerage services transactions. Application areas include: Reorg Mandatories processing, Reorg Voluntaries processing, dividend processing, stock loan processing, P & D processing, and treasury processing. Will interface with business users, supply estimates of the systems to business units, and hire and manage team members. Minimum Requirements: B.Sc. in Computer Science, Engineering or Technology and five (5) years in the job offered or Five (5) years in design, development and implementation of mainframe applications for financial on-line transaction processing (TOLTP). Candidate must also possess demonstrated expertise in the maintenance of mainframe financial applications to a DB2, IDMS, and VSAM environments, dem. exp. in design of mainframe-financial applications using COBOL, CICS and DB2, dem. exp. performing business analysis (developing local application modules) to develop system specifications from business user requirements & dem. exp. developing dividend, check and Reorg Mandatories processing systems. M-F 9-5, Salary $72,000/yr. Job location Boston, MA. Send resumes to Case Number 81813, P.O. Box 8968 Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

CENTRALIZED COMPUTING SERVICES DIRECTOR

Salary Range – $57,583 to $97,440

The North Carolina Office of the State Controller has opened a nationwide search for qualified applicants with extensive knowledge and skills in the management of a large centralized computing center.

As part of the State Information Processing Services (SIPS), a division within the Office of the State Controller, Centralized Computing Services provides centrally-based, shared computing for state agencies and institutions. Over 32,000 devices are connected to a variety to computers housed within CCS. Major hardware includes an IBM ES/9000 model 9X2 mainframe, two CMOS processors (a 9672-RX3 and a 9672-RY4), several major UNIX processors, over 3 tera-bytes of DASD storage, and several STK Silos.

Consisting of three major branches (Systems Programming, Computer Operations, and Capacity and Performance Management), CCS works to provide efficient processing for client agencies at low cost through effective management and use of hardware and software alternatives.

The Director of Centralized Computing Services will provide leadership and direction in planning, developing, and administering statewide policies, standards, and guidelines pertaining to centralized computing services. The individual hired must possess extensive knowledge in the aforementioned area and be acutely aware of emerging technology in and as strategic and long-range planning can be accomplished. The individual hired will oversee three (3) branch heads who supervise approximately 100 employees engaged in the statewide delivery of service. The CCS Director reports to the Director of SIPS.

The successful candidate must hold a baccalaureate degree in business administration, computer sciences, or data processing with at least eight (8) years of mainframe data processing experience, including four (4) years of managerial experience in planning, directing and negotiating mainframe computing services with an emphasis on systems software programming, or an equivalent combination of education and experience. Requisite knowledges include those relating to the capabilities and limitations of a wide range of computing equipment and services. Candidates must also demonstrate managerial proficiency through acquired experience to include budget development and administration, resource allocation, and personnel management. Management prefers candidates with current experience managing a large scale data center running MVS Parallel Sysplex and UNIX. Management prefers a degree in business administration, computer sciences, or data processing.

To reply, submit a State application to Office of the State Controller, 3512 Bush Street, Raleigh, N.C. 27609, Attention: Personnel Services. The State application may be downloaded at www.osp.state.nc.us/OSP or you may call (919) 981-5555 for assistance.

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Client Server Unix Applications Development Team Leader

Tallahassee, Florida, in 30 miles from the Gulf of Mexico and offers majestic parks, clean air, a low cost of living, and beautiful weather year round combined with a high energy collegiate and public sector work environment. If you are interested in an improved quality of living, and in challenging application development opportunities, please consider the following:

The Florida Office of Planning and Budgeting, Systems Design and Development Unit, is offering an exciting position as a key team leader responsible for overseeing and contributing to the development and implementation of Unix/Oracle/NT/Win95 based three tiered and/or Web enabled planning, budgeting, and appropriations application systems for the state of Florida. New application systems will use a three tiered client/server architecture, Groupware, Data Marts, OLAP, Multimedia Voice/Video, and AI/ES facilities.

The anticipated starting salary will be up to $65,000 annually based upon your knowledge and experience level. You must have a minimum of three years of experience leading the design and development of Unix/WinNT, Client/Server based application systems, a minimum of two years of supervisory experience, and strong writing and speaking skills.

The successful candidate will have five or more years experience with the following Client Server technologies as an application developer: ODBC and/or DCE/RPC facilities and functions, PL/SQL, Unix, Win32 programming, Visual Basic, Windows 95, Windows NT, Microsoft COM/OLE/ActiveX, and C/C++.

If you would like to join a team of professionals in the public sector who are dedicated to providing a broad range of High Performance Information Technology services to their customers in an exciting and beautiful environment, please submit a resume and cover memo to Mr. Tom Mannelli at the address below:

Office of the Governor, Personnel Office
The Capitol, Room LL05
Tallahassee, FL 32399-0001
Telephone No. (904) 488-4505 • Fax# (904) 922-6002

The application deadline for the position (Number 00311) is April 15, 1997. The resume and cover memo must be received by 5:00 p.m. of the above date.

If you need an accommodation because of a disability in order to participate in the application/selection process, please notify the Personnel Office in advance.

EEO/AA EMPLOYER

AS/400 PROGRAMMER / ANALYST

Just Born, Inc., a recognized and respected leader in the confectionery industry seeks an experienced AS/400 Programmer/ Analyst.

Candidates must have
- a Bachelor's degree
- five years experience in systems support and development
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We offer a competitive salary and excellent benefits. Qualified candidates should send their resume, cover letter and salary requirements, in confidence to:

JUST BORN, INC.
Human Resources, Att: Job Code CW/PA
PO Box 1158 Bethlehem, PA 18016

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Requirements:
- 5+ years' selling networking products and solutions to government and large corporate organizations
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- Track record of meeting/exceeding quota

SENIOR SYSTEMS ENGINEER

Requirements:
- 4+ years' providing network or network management solutions
- MCSE, CNE/MCNE, CCIE or UNIX certifications or experience with network management software (Tivoli TME, HP-Open View or NetView preferred)
- Excellent communications skills

DSNC provides LAN/WAN design and installation, consulting, database development, imaging products and services, project management, network management and network products to customers worldwide.

Qualified individuals please send or fax resume to: *DSNC, Dept. CWE, 34705 W. 12 Mile Rd, Suite 300, Farmington Hills, MI 48331, Fax: 810-489-1007.* Equal Opportunity Employer

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AS/400 PROGRAMMER/ANALYST

Kentucky Lottery Corporation (KLC) is searching for candidates to design, code, test and document new development & existing applications programs. Qualified applicants will have:

- Degree in Computer Science or equivalent working experience.
- 4+ years Programming experience.
- In-depth understanding of database and structure.
- Exceptional interpersonal skills.

KLC offers a cooperative benefits package and salary commensurate with experience. To apply, fax (502) 473-2229 or mail a resume to:

Kentucky Lottery Corporation
6040 Dutchmans Lane, Ste. 400
Louisville, KY 40205
Attn. Human Resources

EOE

AS400 PROFESSIONALS

Kings, a unique food retailer in Northern New Jersey, has great opportunities for AS400 professionals. We offer broad exposure within a small shop environment that may assist in enhancing your career. We are seeking a Project Leader, Sr. Programmer Analysts and Programmers with a minimum of 3 years RPG programming experience. This position will offer excellent benefits and a competitive salary. Qualified candidates should mail a resume to HR Dept/JJK at **Kings Super Markets, Inc., 2 Dedrick Place, West Caldwell, NJ 07006** or fax at 201-575-6629.

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OLTP system provider. Architecture, application software design & manuf. of terminals, custom modifications, installation and software maintenance.

Send resume to PTI#3 at info@paultum.com, or fax: 972-702-7521

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Software Engineer $49K/yr 8a-5p, 40hr/wk. Analyze/design/implim of & support data mgmt production apsts using UNIX, C, Oracle & RDB/ES, Ms-Windows, based on X.25 network protocol. Customize front end interfaces using Forms 3.0, Reportwriter & Pro*C implimt read comm interfaces using X.4000 protocol. Test s/ware releases. Pgrm UNIX shell scripts to automate syst administrative activities. Masters or equivalent degree-Comp Sci or Engg. 1yr exp in job offrd or related occupation of Pgmr Analyst. 1yr exp in job offrd or in related occupation of s/ware engr or prgmr analyst must incl skills in UNIX, C prgmg, Networking(X.25), Comm(X.400), Oracle & RDB/ES, SQL & Windows prgmg. Job loc: Atlanta, GA. Send resume or apply in person at GADOL, JO#GA 6081379 2943 N Druid Hills Rd, Atlanta, GA 30329-3909 or the nearest Dept of Labor Field Service Office EOE/AA Employer

Systems Analyst $43K/yr 8a-5p, 40hr/wk. Analyze/design/dvlp/implment comp systs & client/server applics using C, SEDL++ on AIX, UNIX, MS-DOS, CMS/VM, C++, Product Mgr, GUI, COBOL, FoxPro & syst administration of SCO-UNIX. Bach or equivalent degree-Comp Sci or Engg. or Applicable comb exp in job offrd. Reqd 3mon exp in job offrd should incl work in use of C, SEDL++ on AIX, UNIX, MS-DOS, CMS/VM, C++, Product Mgr, GUI, COBOL, FoxPro & syst administration of SCO-UNIX. Job loc: Atlanta, GA. Send resume or apply in person to GADOL, JO#GA6086914 2943 N. Druid Hills Rd, Atlanta, GA 30329-3909 or the nearest Dept of Labor Field Service Office EOE/AA Employer

Systems Analyst Atlanta Georgia. Work in a client server environment. Write test scripts & test plans, in detail perform stress test, regression test & security tests using SQA Robot. Team test and Winrunner for writing automated test scripts for the application. Test & develop the applications in Visual Basic under MS-Windows & Windows NT using SQL Server. 1 yr exp, MS in Comp Sc. 40 hrs/wk. $45,700/yr. Apply in person or by resume Georgia Dept of Labor, Job Order #GA 6079037 2493 N Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

Systems Analyst $45K/yr 8a-5p 40hr/wk. Analyze user reqmts/procedures & problems to automate processing, comp syst & s/wares by dsgng/dvlpg/testing client server based compensation & order processing info systs using HP-UX Informix, Oracle Sybase databases, C languages, Shell Scripts & CASE tools. Bach or equivalent degree-Comp Sci or Engg. 2yr exp in job offrd. Reqd 2yr exp in job offrd should incl work using HP-UX Informix Oracle Sybase databases, C language Shell Scripts & CASE tools. Job loc: Atlanta, GA. Send resume or apply in person at GADOL, JO#GA6086912, 2943 N Druid Hills Rd, Atlanta, GA 30329-3909 or the nearest Dept of Labor Field Service Office EOE/AA Employer

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Position Description I:

Title: **System Programmer/Administrator**
Education: Master/Bachelor of Science in Computer Science or equivalent
Experience:
1. Minimum Five Years experience in computing with at least Three Years in one of UNIX operating system environment Sun Solaris, Digital UNIX and IBM AIX
2. Installation, Maintenance, and Management/Administration of UNIX, System Security, Performance and Network Management including Intranets, Internet, Networking between different operating platforms.
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Title: **Oracle Database Administrator**
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Experience:
1. DBA background with at least 3 years as Oracle DBA is a MUST
2. Excellent of all concept relating to system analyses and database design is a MUST
3. Excellent of all concept relating to Client/Server application design architecture is a MUST
4. Excellent working knowledge with ORACLE RDBMS 7x, and SQL is a MUST.
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7. Working knowledge with AS/400 environment is a PLUS.
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General Conditions:
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3. Complete applications shall be forwarded by registered mail to: United Arab Emirates University, Computer Center, P.O. Box 15551, Al Ain, United Arab Emirates
4. Job title shall be inscribed legibly on left side of envelope.
5. Passing technical tests and personal interview is prerequisite.
6. Applications sent before or after the above deadline will not be considered by the University.
7. Candidates shall be called only if they are accepted.
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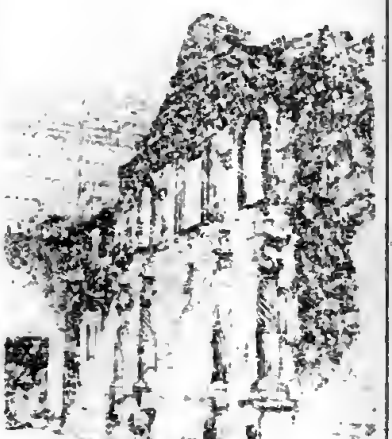
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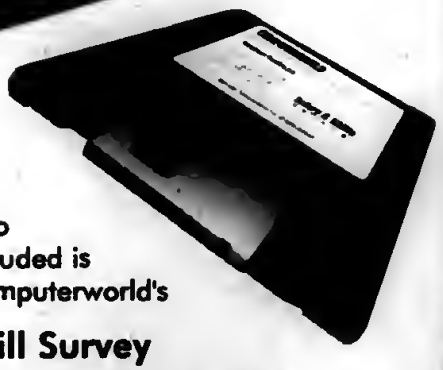
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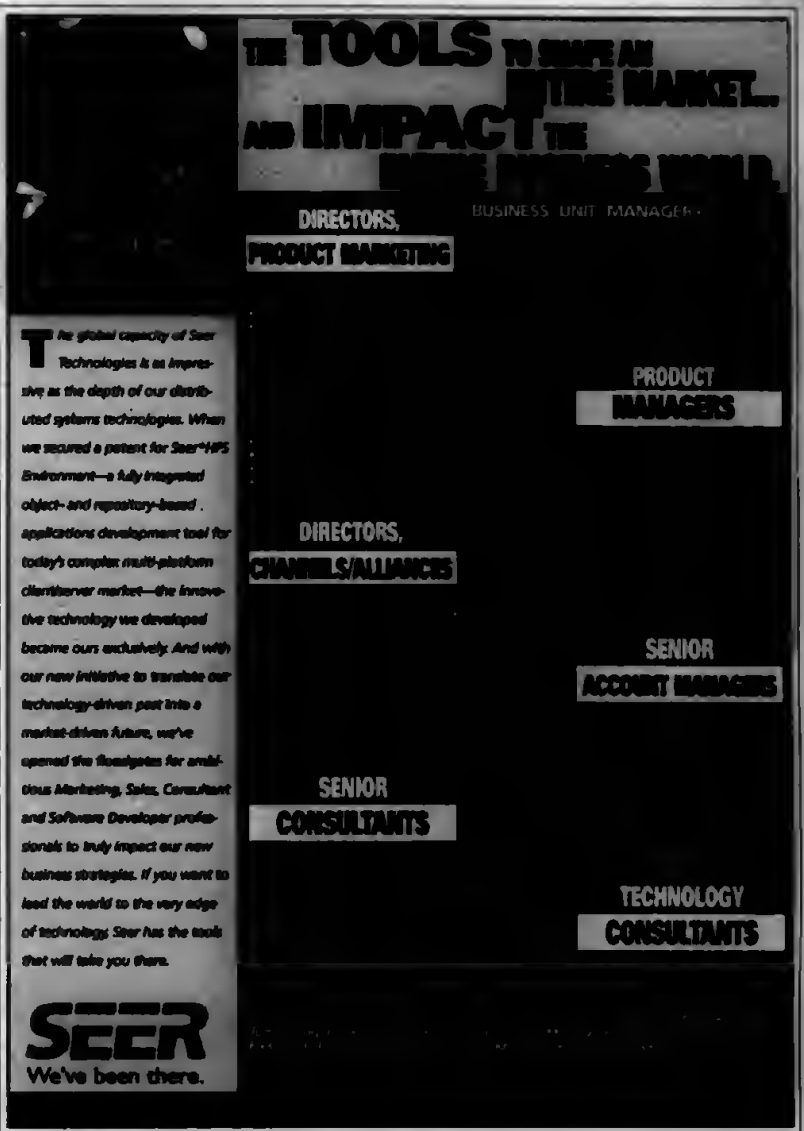
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ASIC DESIGNER. ASIC design for peripheral chip in a RISC based system. Logic design of complex bus interface functions for cache coherent multiprocessing platforms and modeling of the design in a Hardware Description Language, simulation verification, synthesis and timing analysis of the design using place and route tools. Course work complete: MS in Elect. Engr. University level training or project background to competently perform the job duties. Salary: $42,000/yr. Job Site: Austin, TX. Apply at the Texas Workforce Commission, Austin, TX or send resume to the Texas Workforce Commission, 1117 Trinity, Rm. 424T, Austin, TX 78701 | Q • TX7857437. Ad Paid by An Equal Opportunity Employer.

Programmer/Analyst (Colorado Springs, CO; Pittsburgh, PA & other client sites in the U.S.) Analyze, develop, modify, test, implement, maintain & document application systems. Evaluate & analyze existing systems. Prepare documentation & perform unit testing. Environment: MVS, COBOL II, CICS, DB2 and SQL. B.S. in Math or Comp. Sci. or Engg. + 2 yrs. exp. in job offered. Employer will accept a master's degree in stated fields of study + 6 mos. exp. in the job offered. $58K/yr., 40 hrs./wk., 8am-5pm. Must have proof of legal auth. to work in the U.S. Send resume to Mr. Tom Demoskay, May Office Employment Security, 850 N. Fourth St., Indiana, PA 15701. JO#9067260.

Engineer Test Software Development to be responsible for administering the network systems the Ethernet and Arcnet based networks used for real time test systems in a Unix environment, configuring, installing and maintaining wide-area network bridges and file transfer processes which automatically transfer test data to and from remote databases, establishing system security policies, account privileges and monitoring access and configuring and installing network hardware. Also responsible for developing real time data acquisition and control software. This includes developing and maintaining C language applications for ASSET test systems implemented on QNX operating system, writing shell scripts, developing user interfaces using X-Windows, Motif and associated GUI application builders and providing in-depth support for other developers on X-Windows and QNX Photon windowing systems. Also responsible for administering the QNX operating system and as maintenance distributing current operating system versions to all test sites and developer stations. Responsible for test system support including developing and maintaining software release systems for internally developed software products and developing on-line help using the Hypertext Markup Language (HTML). Using principles of Computer Networks, Network SYN, Microcomputers and Control Systems and structured software design. Must have Master of Science in Computer Science or Electrical or Electronics Engineering with one year of experience as an Engineer Test Software Development or one year of experience as a System Applications Engineer and/or Research Assistant. Applicant's experience must include: system administration functions for a Unix operating system using "C" programming language and structured software design, network programming and administration, writing shell scripts, developing graphical user interfaces using X-Windows and developing on-line help using the Hypertext Markup Language (HTML). Applicant's course work must have included: Computer Networks, Network SYN, Microcomputers and Control Systems. 40 hours, 7:00 a.m. to 5:00 p.m. $44,200 per year. Send resumes with social security numbers to: Indiana Department of Workforce Development, 10 N. Senate Ave., Indianapolis, IN 46204-2277. Attention: Sean Blancaneaux | D #3450420. An employer paid ad.

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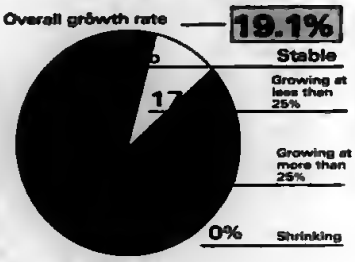
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Career Survey: Financial analysis/management software

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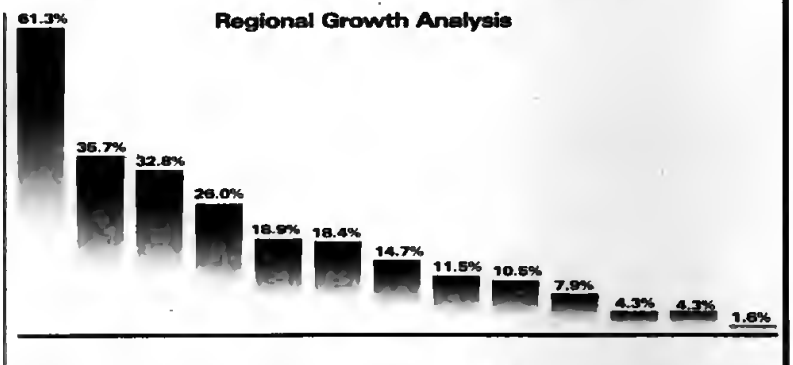
Overall growth rate — 19.1%



Survey Base: 82 Technology Firms Involved in Financial Analysis/Management Software

Survey conducted between January '97 and March '97.

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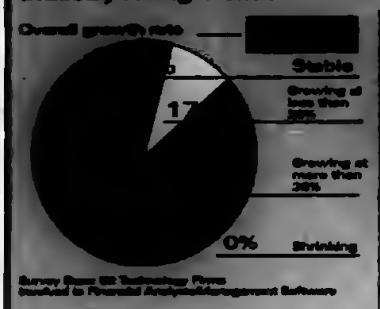
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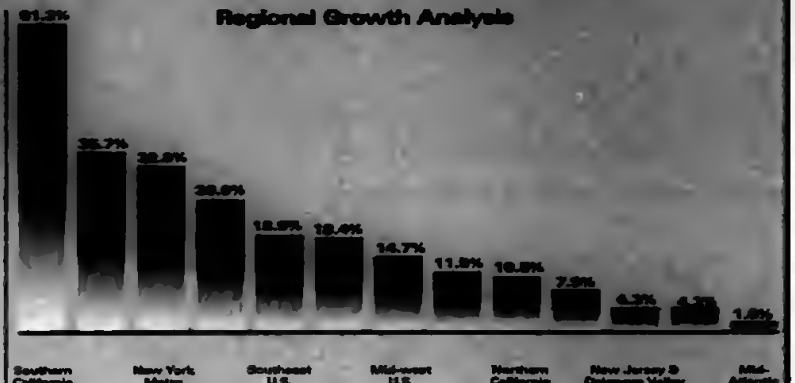
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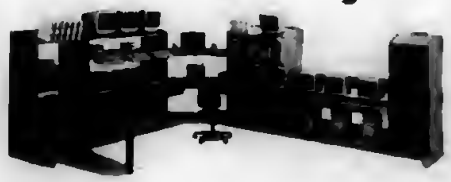
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Super Prize Sweepstakes - Winners will be selected in random drawings from all eligible entries received. Early Bird winners will be selected in a separate drawing from among all eligible entries. Sweepstakes begins 9/1/98. Drawings will be conducted up to about 4/30/98 by Ventura Associates, Inc., an independent judging organization whose decisions are final. Drawing will be held @ 1040 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE Different creative presentations of the sweepstakes may present different prize choices. Values of a given prize item will be approximately the same. All prize requests will have the option of selecting any prize offered of level even. However, estimated maximum retail values and odds of winning each prize are as follows: 1 Grand Prize - $25,000 (or cash alternative of $25,000); 1 First Prize - $2,000; 1 Second Prize - $1,000; 50 Third Prizes - $00; 1,000 Fourth Prizes - $00 each; 1 Early Bird Prize - $5,000. Total prize value: $102,000.00. Certain creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize if the Early Bird Prize is presented in your offer, your entry must be received by the Early Bird date specified elsewhere in this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes will not exceed 300 million. All Super Prize Sweepstakes prizes will be awarded.

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For winners list (available after 9/30/98) send self-addressed, stamped envelope by 9/15/98 to: Super Prize Winners, P. O. Box 9103, Medford, NY 11763-9103.

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Cisco 36-37
http://www.cisco.com

Compaq Computer Corp. 58-59, 80
http://www.compaq.com

Computer Associates 5, 18-19
http://www.cai.com

Computer Museum 76

Data General 71
http://www.dg.com

Digital Equipment Corp. 22-23
http://www.digital.com

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http://www.eastmansoftware.com

EMC Corp. 30-31
http://www.emc.com

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http://www.expersoft.com

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http://www.gateway2000.com

IBM C4
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ICE 33

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http://www.imation.com

Innovation Data Processing 9
http://www.innovationdp.fdr.com

Intel 50-51
http://www.intel.com

International Oracle Users Group-Americas 66
http://www.ioug.org

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Lotus Development Corp. 26-27
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Microsoft 11, 79
http://www.microsoft.com

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http://www.ncd.com

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http://www.peritus.com

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STOCK TICKER

The Week in Stocks

Gainers

PERCENT

Peak Technology Group(L)	46.8
Computervision Corp.	46.2
Creative Technology Ltd.	31.9
Electroglas Corp.	30.6
Micro Touch Systems Inc.	13.4
Adaptec One-Line	10.2
EMC Corp.	9.2
Parametric	7.9

DOLLAR

Adaptec On-Line	5.63
Gateway 2000 Inc.	5.13
Seagate Technology	5.06
Intel Corp.	4.44
EMC Corp.	3.69
LSI Logic Corp.	3.75
Western Digital Corp.	3.75
Compuware Corp.	3.72

Losers

PERCENT

Ascend Communications Inc.	9.8
Cascade Communications	9.2
Cisco Systems Inc.	5.8
Cognex Corp.	5.5
Network Equipment Tech	10.8
Network General	5.8
Parametric Technology Corp.	4.5
Sybase Inc.	4.5
Synoptics Comm. Inc.	6.5
Wonderware Corp.	6.5

DOLLAR

Cisco Systems Inc.	5.00
Intel Corp.	4.44
Microsoft Corp.	4.38
Oracle Corp.	4.13
Novell Inc.	3.88
Seagate Technology	5.06
Sun Microsystems Inc.	4.63
Synoptics Comm. Inc.	6.50
Tandem Computers Inc.	4.13
Wonderware Corp.	6.50

INDUSTRY ALMANAC

Exabyte seeks safe perch

Two financial analysts say they are hopeful about the future of Exabyte Corp. (Nasdaq: EXBT), the world's largest independent maker of tape storage devices.

Their enthusiasm is based largely on Exabyte's Eagle Nest, a recently unveiled desktop docking bay for detachable tape or floppy drives. It helps expand the company's range beyond high-end backup tape drives and libraries for major enterprises to workgroups using desktop PCs, the analysts say.

"I haven't seen anything like Eagle Nest, which gives unlimited storage for limited desktop space and helps the office user go back and forth to home," says Richard Baldry, an analyst at Olde Discount Corp. in Detroit.

One factor that held back Exabyte revenue late last year was limited production of 8mm tape recording heads by its German subsidiary, Exabyte Magnetics GmbH, according to Baldry and Ryan K. Stevens Jr., an analyst at H. G. Wellington in New York.

The same issue has plagued the storage industry in recent months, but in Exabyte's case it clearly hampered several millions of dollars of potential sales, Stevens says.

In its fourth-quarter 1996 report, the company cited the shortage as one reason behind a loss of 9 cents per share. Exabyte Chairman Peter Behrendt also cited soft demand for products, high operating expenses and a bad debt charge.

Exabyte, based in Boulder, Colo., finished the last quarter with revenue of $86 million, down from $97 million in the same period in 1995. For 1996, revenue was $365 million, down from $374 million in 1995. Earnings, nonetheless, were positive in 1996 and negative in the previous year.

Inconsistent earnings concern Stevens; he says he recalls when the stock sold for $41 in the early 1990s — nearly double its highest value in the past year. — Matt Hamblen

LOOKING UP?

Exabyte stock performance



Exch	52-Week	Range	Apr. 4 Close	We Net Change	We Pct Change
COMS	81 19	50 63	3 COM Corp	64 13	0 06	0 0
ANT	63 06	49 63	ABERFITECH Corp	50 06	-2 50	-4 1
3COMD	30 25	26 50	Ascend Communications	45 81	-6 19	-11 9
T	44 25	31 63	AT & T	33 38	1 50	-5 3
BNYN	19 75	1 63	Banyan Systems Inc. (L)	1 94	-0 31	13 9
BAY	16 88	15 38	Bay Networks Inc.	17 50	-0 25	1 4
BEL	71 50	63 50	Bell Atlantic Corp	50 38	-0 38	-0 5
BLS	47 63	33 25	Bellsouth Corp	50 63	1 75	-4 1
BRKT	32 25	11 75	Brooktrout Technology (L)	13 50	1 38	9 2
CS	63 63	36 50	Cabletron Systems	50 25	0 00	0 0
CSCC	91 25	59 50	Cascade Communications	50 13	1 75	3 3
CCBN	24 13	9 38	Centigram Communications	10 50	0 75	3 4
CSCO	75 75	48 78	Cisco Systems Inc	51 13	0 13	5 8
CLIX	8 25	1 75	Commission Labs Inc. (L)	1 75	-0 50	17 6
CMNT	10 50	8 75	Computer Network Tech	9 38	-0 38	-4 9
XCOM	12 75	6 75	CrossComm	7 50	-0 63	7 7
DIGI	35 88	12 63	DSC Communications	31 38	-0 50	-2 3
FORE	64 75	10 88	FORE Systems Inc. (L)	11 25	-2 50	13 5
GDC	19 50	8 13	General Datacomm Inds. (L)	6 25	-0 50	3 4
GSN	46 75	35 25	General Signal Networks	37 50	1 63	-4 2
GTE	49 38	37 75	GTE Corp	44 25	1 75	3 9
LU	80 63	59 75	Lucent Tech	53 25	0 75	1 4
MADGF	49 88	-6 88	Madge Networks NV (L)	7 75	0 75	5 8
MCIC	75 75	72 19	MCI Communications Corp	36 13	0 50	-2 4
MNPI	11 11	3 50	Microcom Inc	8 75	1 38	10 3
NETM	19 88	2 69	NetManage Inc.	2 69	-0 19	-8 3
NTRK	10 88	2 50	Netrix Corp	3 56	-0 38	3 4
NCDI	36 25	6 88	Network Computing Devices	50 13	1 25	11 0
NWK	31 63	11 11	Network Equipment Tech	12 88	1 50	10 8
NETG	20 25	15 25	Network General	21 91	0 19	5 8
NN	17 25	10 25	Newbridge Networks Corp	29 50	-0 50	3 1
NT	77 88	45 88	Northern Telecom Ltd.	64 50	-2 38	3 7
NOVL	15 63	8 38	Novell Inc.	10 19	-0 50	1 8
NYN	53 38	42 00	Nynex Corp	44 38	-0 25	-0 6
OCTL	31 75	16 88	Octel Communications Corp	20 13	-0 63	3 7
ODSI	27 50	10 75	Optical Data Systems Inc.	13 75	0 25	2 2
PCTL	41 25	10 63	Picturetel Corp. (L)	10 75	-2 50	16 9
PTON	6 50	1 31	Proxicom Inc	1 88	0 19	11 1
RACO	7 88	3 88	Racotek Inc. (L)	3 13	-0 13	3 8
RETE	10 88	3 50	Retix	4 88	-0 13	2 0
SBC	58 25	46 00	SBC Communications	50 63	1 13	-2 2
SFA	10 38	12 88	Scientific Atlanta Inc	45 13	1 25	-0 7
SMFA	17 25	8 25	Shiva Corp (L)	9 38	-2 50	21 1
PON	48 00	34 88	Sprint Corp	44 88	1 63	-3 5
SMSC	10 75	8 25	Standard Microsystems Corp	9 75	-0 38	-4 0
USW	37 25	27 25	US West Inc	33 88	-0 50	1 0
USRX	105 50	45 38	US Robotics	58 00	-2 25	-4 4
XIRC	33 13	17 13	Xircom	16 88	-0 50	3 4
XYLN	76 00	15 38	Xylan Corp (L)	17 38	-0 38	3 0
AALR	15 25	6 13	Advanced Logic Research	9 25	0 50	0 7
AAPL	38 88	15 13	Apple Computer Inc	19 13	0 50	2 7
BSTA	8 50	3 94	BSTResearch Inc	4 38	-0 38	7 9
CPQ	67 88	36 78	Compaq Computer Corp	34 88	-2 13	2 8
DELL	76 00	17 50	Dell Computer Corp	72 06	2 38	3 4
GATE	66 63	27 75	Gateway 2000 Inc	57 50	5 13	9 6
HWP	60 06	37 75	Hewlett Packard Co	51 88	3 13	5 2
MUEI	25 00	8 75	Micron International Inc	31 88	1 50	7 7
NIPNY	65 00	49 88	NEC America	50 50	3 50	5 3
SGI	30 13	17 88	Silicon Graphics	29 13	-0 38	-0 5
SUNW	29 13	22 00	Sun Microsystems Inc	30 38	-0 25	-0 5
ASOM	14 88	9 13	Ashoms Corp	8 88	1 19	12 3
DGN	30 75	9 88	Data General Corp	16 13	1 50	-8 3
DEC	63 25	25 25	Digital Equipment Corp (L)	26 88	1 38	-4 5
IBM	178 13	89 13	IBM	129 88	-0 06	5 8
MDCD	20 25	5 88	Meridian Data Inc	5 94	0 00	1 6
NETS	6 13	1 28	Net Frame	1 94	0 13	6 7
SQNT	20 13	10 38	Sequent Computer Sys	16 25	1 88	9 2
SEQS	4 38	1 88	Sequoia Systems Inc	2 19	-0 13	5 4
SRA	15 13	16 88	Stratus Computer Inc	31 38	0 13	0 4
TDM	11 25	8 88	Tandem Computers Inc.	31 63	0 13	1 1
UNS	9 13	5 38	Unisys Corp	8 88	-0 38	5 9
ADSP	61 13	28 10	Adobe Systems Inc	42 88	0 88	2 1
AMSWA	7 81	3 75	American Software Inc	6 38	-0 58	-8 1
APLX	42 50	5 63	Applix Inc (L)	6 13	-2 25	83 3
ARSW	82 75	31 88	Arbor Software	26 13	0 25	1 0
AUSK	44 25	18 38	Autodesk Inc	34 38	2 38	7 5
BGSS	52 50	14 88	BGS Systems Inc	30 38	0 50	1 7
BMCS	51 88	25 19	BMC Software Inc	48 75	1 50	5 2
BOOL	27 50	14 88	Boole and Babbage	22 25	-0 75	3 3
BORL	20 25	4 75	Borland Int'l, Inc.	6 75	-0 25	3 6
BORJY	33 38	8 63	Business Objects	9 88	-0 88	-8 5
CAYN	48 88	3 81	Cayenne Software Inc	3 94	-0 25	-6 5
CNTR	8 75	2 63	Centura Software	3 63	-0 50	12 1
COGNF	39 50	18 25	Cognos Inc	28 75	2 25	5 8
CA	43 88	37 31	Computer Associates	42 63	1 50	4 0
CVN	13 25	3 13	Computervision Corp (L)	3 75	1 38	26 8
CPWR	58 25	22 75	Computware Corp	44 31	0 38	1 4
CSRE	23 88	10 75	Consware Inc	18 38	-0 50	2 8
COSFF	13 88	9 13	Corel Corp	9 88	-0 50	1 0
DWTI	3 81	2 63	Datawise Technologies Inc.	3 25	-0 38	10 7
FILE	58 50	9 50	Filetek Corp (L)	10 38	5 13	33 1
FBTE	83 75	19 38	Forte Software (L)	21 38	-2 75	11 3
FTPS	14 38	4 88	FTP Software Inc	8 56	-0 50	-4 3
HUMCF	47 63	23 38	Humancad Corp Ltd	30 13	1 88	-6 7
HYSW	26 88	9 75	Hyperion Software Corp	17 75	0 25	1 4
IRIC	18 38	11 88	Information Resources	12 38	1 38	-10
IFMX	30 13	8 88	Informix Corp (L)	9 88	5 50	38 5
INGR	13 88	7 38	Intergraph Corp	7 38	-0 44	-5 5
LEAF	9 38	1 31	Interleaf Inc	1 63	0 13	7 1
ISLI	16 38	8 88	Intersolv Inc. (L)	6 88	1 38	16 7
INTU	55 75	26 88	Intuit Inc	27 44	1 13	3
TLC	50 31	5 50	Learning Co. (The) (L)	5 88	1 13	-16 1
LCWX	22 25	1 25	Lotus Words	1 63	-0 31	5 3
MAPS	10 88	7 88	Mapinfo Corp	8 13	-0 63	7 1
MATH	9 25	3 63	MathSoft	3 63	1 19	32 1
MCAF	65 50	23 63	McAfee Associates	47 25	9 81	17
MENT	18 88	7 38	Mentor Graphics	8 25	0 13	1 6
MFGY	21 25	9 75	Micro Focus	19 38	1 13	5 8
MCRI	38 88	6 88	Microcard Inc	7 88	0 50	-6 5
MSFT	103 50	49 88	Microsoft Corp	95 50	0 88	3 2
ORCL	11 38	26 50	Oracle Corp	38 38	0 50	1 3
PMTC	88 25	13 75	Parametric Technology	64 50	2 88	-4 3
PARQ	14 63	1 19	Parc Place Systems Inc	1 38	0 13	8 3
PSFT	56 75	25 88	Peoplesoft	50 13	-1 19	2 9
PTEC	30 38	12 75	Progress Technologies	15 25	0 25	1 6
PSQL	13 75	5 50	Platinum Software	9 06	1 38	13 3
PLAT	19 75	8 25	Platinum Technology	12 19	-0 38	-0 5
PRGS	38 00	13 13	Progress Software Corp	18 13	-0 38	-2 3
RNBO	24 38	14 82	Rainbow Technologies Inc	18 38	-0 75	-4 4
REDB	81 88	8 88	Red Brick Systems Inc (L)	8 88	-0 63	-42 7
SAPE	38 25	25 38	Sapient Corp	31 50	-2 50	3 8
SCOC	9 13	3 50	SCO Inc.	8 25	0 00	0 0
SDTI	54 88	21 88	Security Dynamics Tech	27 50	1 06	3 8
SDTA	19 75	8 88	Shiva Corp Ass (L)	9 81	-0 38	-0 9
SBW	91 38	27 25	Sterling Software Inc.	28 06	9 38	1 4
SDRC	57 38	33 06	Sdrc Dynamics Research	20 75	0 88	4 6
SYBS	27 75	12 13	Sybase Inc. (L)	14 50	1 25	9 4
SYMC	10 38	8 75	Symantec Corp	15 13	0 88	6 1
SNPS	50 50	21 75	Synopsys (L)	37 63	1 25	4 7
SSAX	25 25	8 88	System Software Assoc (L)	5 63	1 88	-25 0
SYSF	96 50	5 38	Systemsoft Corp	9 38	-0 31	-3 3
TRUV	9 63	2 25	Transvision Corp	2 69	0 06	2 4
VIEW	17 88	8 38	Viewlogic Systems	13 75	1 97	-11 0
VMRK	13 63	5 50	Vmark Software Inc	9 13	-0 75	-19 6
WALS	15 38	9 50	Walker Interactive Systems	10 88	-1 87	-14 3
WALL	27 06	12 25	Wall Data Inc.	18 38	-0 75	-4 3
WANG	36 13	15 38	Wang Laboratories Inc.	13 63	0 06	0 4
AOL	71 50	22 38	America On-Line	48 19	5 63	13 2
BBN	38 75	13 50	BBN Corp	13 38	-0 25	-1 4
CSRV	35 88	8 88	Computervision Corp.	12 97	3 72	40 2
EDRY	38 75	10 38	Edify Corp	10 88	-0 63	-5 3
LCOS	20 88	9 75	Lycos Inc	15 56	-0 81	-2 0
NETC	66 50	7 88	Netcom On-Line	9 88	2 00	18 2
NSCP	75 56	23 56	Netscape Comm. Corp	30 25	-0 38	-2 8
OMKT	50 31	8 63	Open Market Inc	10 13	-0 13	1 2
PSIX	19 38	6 88	PSI Net (L)	7 63	0 25	3 4
QDEX	17 38	2 00	Quotedisplace Corp	6 88	0 88	20 0
RAPT	38 88	12 50	Rapid Systems (L)	33 63	0 63	4 8
SCUA	32 25	4 75	Secure Computing Corp. (L)	5 88	0 00	0 0
SPYC	5 88	3 00	Spyglass Inc. (L)	3 25	-0 25	-3 3
YHOO	93 00	15 50	Yahoo! Inc.	31 63	3 06	10 7
AMD	30 50	10 88	Advanced Micro Devices	20 38	-1 63	-8 5
ADI	28 25	12 75	Analog Devices Inc	25 63	2 38	10 7
CHPS	88 38	8 63	Chips and Technologies	9 94	-0 88	-8 3
CRUS	30 25	10 63	Cirrus Logic	11 38	-0 75	-6 5
CY	16 88	9 19	Cypress Semiconductor Corp	12 38	0 00	3 7
CYRX	38 50	31 38	Cyrix	19 50	-1 00	2 1
INTC	105 00	58 38	Intel Corp	143 38	6 88	3 2
LSCC	54 88	38 75	Lattice Semiconductor	46 88	3 63	4 2
LSI	39 50	17 88	LSI Logic Corp	38 38	3 75	10 8
MCRL	47 50	13 88	Micrel Semiconductor Inc.	21 38	-0 75	-2 4
MU	59 25	16 38	Micron Technology	38 63	0 50	1 2
MOT	88 75	64 13	Motorola Inc.	59 63	3 13	5 5
NSM	32 25	13 38	National Semiconductor	29 13	3 88	3 6
TXN	87 25	40 50	Texas Instruments	80 50	3 00	3 9
VLSI	36 88	18 38	VLSI Technology	18 88	0 56	3 7
XLNX	51 63	24 50	Xilinx (M)	30 88	0 50	1 7
ZIGC	50 38	14 88	Zilog Inc	21 38	0 38	0 0
ADPT	46 88	11 88	Adaptec Inc	37 75	0 50	1 3
APCC	31 88	8 50	American Power Conversion	21 13	-1 88	-8 2
CBEX	3 50	3 25	Cabletron Corp (L)	3 25	-0 13	-0 5
CREAF	15 18	3 50	Creative Technology Ltd.	11 88	2 88	31 9
RACE	24 50	5 75	Data Race Inc	10 88	-0 03	-4 0
DTM	12 50	4 38	Datatape Corp	9 12	-0 38	-3 9
EMC	88 88	46 50	EMC Corp	38 63	3 69	11 2
EMUX	21 38	12 88	Emulex Corp.	15 25	0 50	1 2
ESDC	28 00	18 50	Exabyte Corporation	23 75	1 75	-8 8
EXBT	42 75	9 88	Exabyte	12 63	0 00	0 1
ISLI	9 13	1 38	Intelligent Info. Systems	1 56	-0 03	0 0
IOMI	30 13	12 63	Iomega Corp.	17 00	5 85	1 5
IPLS	9 38	1 25	IPL Systems Inc	1 81	-0 19	-9 4
MAGC	37 38	17 63	Komag Inc.	36 50	0 06	0 0
MTSI	38 75	12 88	Micro Touch Systems Inc.	23 25	2 75	13 4
PEAK	27 88	8 50	Peak Technology Group (L)	12 13	3 50	30 0
PMCL	12 50	2 00	Pinnacle Micro Inc	2 44	-0 13	-4 9
AQW	9 75	3 75	QMS Inc.	4 25	-0 35	-7 6
QNTM	44 00	50 38	Quantum Corp	43 25	0 00	3 3
RDUS	4 38	0 25	Radius Inc.	0 51	0 00	0 0
SEG	38 38	10 13	Seagate Technology	50 50	0 00	11 0
STK	54 38	38 00	Storage Technology	41 75	2 25	5 7
STLC	8 75	0 53	Stratasystems Corp.	0 69	-0 06	-8 5
TEK	52 25	32 25	Tektronix Inc.	50 88	0 38	0 7
WDC	77 25	16 88	Western Digital Corp	64 56	3 75	6 2
XBY	59 25	42 13	Xircom Corp.	57 50	0 00	0 0
AMSB	37 13	15 75	American Mgmt Systems	21 38	1 13	-5 0
ANLY	38 50	16 75	Analytics Int'l.	21 25	1 88	-8 5
AUD	50 75	25 63	Auto Data Processing	42 63	0 00	0 0
BDMI	30 75	18 13	BDM International Inc.	20 38	1 38	-6 3
CATP	33 38	17 75	Cambridge Tech Partners	24 13	0 13	0 9
CEN	38 88	32 25	Ceridian Corp	32 25	-3 63	-10 1
CIDO	33 00	21 38	Cimedco Inc	28 75	-3 63	-8 4
CPSI	38 88	18 25	Compusa Inc.	17 13	0 00	0 0
CHRZ	56 38	33 88	Computer Horizons	51 75	1 25	4 1
CSC	88 88	60 25	Computer Sciences (L)	63 63	1 25	2 0
FSK	67 50	50 38	Computer Task Group	56 50	0 75	2 1
CDAT	38 63	12 75	Control Data Systems Inc.	15 13	0 13	0 9
ECGS	13 88	4 25	Edgemark Document Software	4 25	-0 38	-8 1
EDS	63 38	38 13	Electronic Data Systems Corp. (L)	38 75	-2 75	-6 5
HMC	50 50	15 50	Hamilton Corp	23 88	1 38	6 1
INEL	11 50	2 81	Intelligent Electronics	3 31	-0 06	-1 8
KEA	37 38	16 88	Keane Inc.	34 63	-2 50	-7 5
MICA	25 50	9 63	Mincresale Inc	13 63	0 13	0 9
PAYX	63 63	50 13	Paychex	44 13	2 03	0 3
PMS	35 50	13 38	Policy Management Sys.	17 88	-0 63	-1 6
REY	30 63	21 38	Reynolds and Reynolds	23 63	-2 50	-9 6
SCIN	88 88	34 44	SCB Computer Tech. Inc	17 88	0 38	2 9
SEIC	88 38	17 75	SEI Corp	20 63	-0 35	-1 2
SMED	72 13	50 25	Shared Medical Systems	47 13	-3 00	-6 5
SSPE	93 38	14 75	Software Spectrum Inc	15 25	-0 38	-4 7
SNDE	50 75	23 25	Sungard Data Systems	33 75	-0 25	-0 6
VST	38 75	8 88	Vanstar Corp	7 75	-0 38	-4 8

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp. 6,82,84
3M Visual Systems 116
Aberdeen Group, Inc. ..... Cover 1
Abilnet, Inc. ..... Cover 1
Abstraction Software 84
Adaptec, Inc. 28
Addison-Wesley 77
Advanced Logic Research, Inc. 89
Advanced PC Technologies Co. 8
Ventureman 8
Aflalo Corp. 89
AMD Corp. 3
Amdahl Corp. 3,48
American Online, Inc. 17,83,89
American Medical Association 12
Andrew Prophet Research & Consulting 48
Analysis Computing Ltd. 48
APL Ltd. 90
Apple Computer, Inc. 8,175
Aprio Healthcare Group, Inc. 22
Asanté Communications, Inc. 30
Association for Information and Image Management 28
AT&T Corp. 8,83
Avant Technologies, Inc. 14
Banyan Systems, Inc. 3
Bay Networks, Inc. 4,82,84
Bayerische Vereinsbank 38
BBN Planet ..... Cover 1,1,82,83
Bell Mobility Cellular ..... Cover 1
Bellcore 70
Black & Decker Corp. ..... Cover 1
Blanchar Systems, Inc. 84
BMC Software, Inc. 14
Books & Bookings, Inc. 3
Booz Allen & Hamilton, Inc. 83,177
Bull International, Inc. 12
British Broadcasting Co. 8
British Telecommunications PLC 8
Brookhaven Associates 30
BT Networks & Systems ..... Cover 1
Cabletron Systems, Inc. 14,82
Cascadia, Inc. 6
Castle Corp. 3
Cendata Reports, Inc. 8
Cendol Technology, Inc. 4
Cencom Communications Corp. 30
Cenix Computer Co. 48
Chelsea Hotels International, Inc. 13,38
Cigna Corp. 4
Cisco Systems, Inc. 4,14,82,83
Citibank 66
Citicorp 8
Computing Computer Corp. 3,48
Computerware Corp. 17,89
Computer Associates International, Inc. 14
Computer Hardware Corp. 89
Computer Task Group 37
Compuware Corp. 20
Concord Communications, Inc. 20
Coopers & Lybrand 83,70,78
CorelCorp. 113
Cray Research, Inc. 74
CyberMark 48
Cycle Corp. 30
Dana Corp. 8
Data Miner & Associates 30
Data General Corp. 83,96
Datapoint 66
Data Tools, Inc. 40
Dayspring Greeting Cards 12
Deere & Co. 10
Delphi Consulting, Inc. 28
Dentsu, Inc. 30
Digital Equipment Corp. ..... Cover 1,1,82,83,125
Dun & Bradstreet Software 12
Dutchess Knish Co. ..... Cover 1,1,28,75
Edge Software 48
Electronic Data Systems Corp. 30
Electronic Privacy Information Center 18,89
EMC Corp. 3
Enterprise Rent-A-Car 30
Equifax, Inc. 12
Fiserve Corp. 28
First Chicago Trust Co. ..... Cover 1,1,75
First Bank N.A. 28
Forrester Research 113
Fulbright, Jaworski, Ramsey & Co. 17
Fountain Software Development, Inc. 20
Fujitsu Ltd. 30
Gartner Group, Inc. ..... Cover 1,1,14,43,89,175
GE Information Services 37
Gesac Computer Corp. 89
Genesis Services 116
General Motors Corp. 4
Giga Information Group 113
Glenn Wellesley, Inc. 4
GMAC Commercial Mortgage Corp. 6
Gordon & Gladstone PC ..... Cover 1,1
GTE Corp. 17
H&R Block, Inc. 17
Handspeak & Quinn, Inc. 30
Hanley-Bandstone, Inc. 28
Harris Corp. 10
HDS Network Systems, Inc. 89
Health Insurance Plan of Greater New York 28
Healthsource, Inc. 20
Hewlett-Packard Co. 3,8,14,20,48,82
Hitachi Data Systems Corp. 3
Honeywell, Inc. ..... Cover 1,1,75
Horwitz Corp., Inc. 38
IBM Global Services 30
IBM 1,3,10,28,48,82,83,84,87,113,175
IDC Computer Services, Inc. 22
Infinity Research, Inc. 4
Infonet Software 1,17
Integrated Systems Group 2
Intel Corp. 3,8,14,48
International Data Corp. 1,3
Interlink Computer Sciences, Inc. 14,48,48,82
Interlan Solutions, Inc. 89
Intergis Corp. 44
Intgen Corp. 89
J.P. Morgan & Co. ..... Cover 1
Jacobi ..... Cover 1,175
Jupiter Networks, Inc. 82
Jimmy Dean's Foods 40
John Wiley & Sons, Inc. 91
Key Labs 175
KPMG Peat Marwick 89
Lehigh Software, Inc. 6
Lockheed Martin Corp. 4,6
Lotus Development Corp. 4,20
Lowell General Hospital 35
Lucent Technologies, Inc. 83
Madison Gas & Electric Co. ..... Cover 1
MainControl, Inc. 35
Managing Communications, Inc. 113
Manugistics Inc. 3
Manhattan International, Inc. ..... Cover 1,1
MCI Communications Corp. 1,8,83
Medifax Data, Inc. 40
Medifax Research, Inc. 89
Meta Group, Inc. 10,83
Metaworx, Inc. ..... Cover 1
Michael Anthony Jewelers 40
Micro Networks Corp. 82
Microsoft Corp. 3,8,14,20,48,82,83,84,113,175
Millennium Publications, Inc. 83
Mindspring Enterprises, Inc. 83
Minolta Corp. 28
Minolta Information Systems, Inc. 28
Motorola, Inc. 83
Nabisco, Inc. 10
Nate York & Associates 91
National Center for Atmospheric Research 30
NCR Corp. 48
NEC Corp. 30
Nelson Ore Line Communication Services, Inc. 83
Netlligent, Inc. 10
NetOp, Inc. 14
Newsbytes, Inc. 10
Nextspace Communications Corp. 10
Nokia 82,83,84,89
National Systems, Inc. 20
Network Computer, Inc. 8
Network Performance Corp. 20
Northern Trust Co. 8
Novell, Inc. 3,48,82
NTel Solutions 44
O'Reilly and Associates, Inc. 89
Object Design, Inc. 3
Old Colorado City Communications Co. ..... Cover 1
On Target Shipping 116
On Technology Corp. ..... Cover 1
Oracle Corp. 8,8,10,48,48,48,89
Oxford Health Plans, Inc. 8
Pacific Telesis Group 8
Peripheral Research Corp. 44
Pilkin, Inc. 113
Playboy Enterprises, Inc. ..... Cover 1,1
Powersoft 12
Precise Software Solutions 48
Proforma Corp. 61
Project Management Institute 77
Proteon Corp. 40
Prove Technology, Inc. 48
Pyramid Technology Corp. 8
Quad Tagon Marketing Systems, Inc. 48
Rational Resource Services, Inc. 89
Rich Products Corp. 89
Rockwell Semiconductor Systems 89
Rolm Dockline Technologies 30
SAP AG 8,96
SAS Institute, Inc. 89
SBC Communications, Inc. 8
Saab Computer Television, Inc. 88
Sasco, Rockwell and Co. 40
Shaw, Pittman, Potts & Trowbridge ..... Cover 1,1
Silicon Graphics, Inc. 30
Silver Software, Inc. 12
Software AG 30
Southwest Airlines 90
Sprint Corp. 89
Staffware Corp. 89
Sun/Check Services, Inc. 30
Storage Technology Corp. 3
Strategic Network Consulting, Inc. 84
Strategic Research Corp. 48
Summit Paradigm, Inc. 12
Sun Microsystems, Inc. ..... Cover 1,8,10,83,89,175
Swiss Bankers 40
Sybase, Inc. 8,10,38,89
Symantec Corp. 10,82,83,96
T. Rowe Price Investment Services, Inc. 14
Taking Science & Technology, Inc. 66
Tandem Technologies, Inc. 89
TeleCheck, Inc. 17,82,83
Tenon 30
Tenon Enterprise Systems 6
Texas Instruments, Inc. 8
Tokyo Digital Phone 30
The Barton Group, Inc. 89
The Mann Group, Inc. 4
The Money Store ..... Cover 1
The Outsourcing Institute ..... Cover 1,1
The Quality Assurance Institute 37
The Timberland Co. 88
The Torrey Group 70
The Yankee Group 35
Thomas Consultants International, Inc. 48
Time, Inc. 3
Time Warner, Inc. 17
Tivoli Systems, Inc. 14
Toys R Us, Inc. 10,40
TWP Square and Illustration Group 6
U.S. Robotics Corp. 83,89
Unicom Software, Inc. 14
United Healthcare Corp. 89
United Technologies 89
Universal Print Synthetic ..... Cover 1
University Corporation of Atmospheric Research 22
University of California Lawrence Livermore National Laboratory 6
USA Group, Inc. 48
USA Today 4,175
Utah Interest Services ..... Cover 1
Utimat Technologies, Inc. 89
Vantamark 8
Vertex Software Corp. 96
Virgin Atlantic Airways 1
Vital Signs, Inc. 48
Walt Disney Imagineering 44
Wang Laboratories, Inc. 28,30
Warrington Networks, Inc. ..... Cover 1
Wellstone, Inc. 30
Wellness Net LP 10
Windsor Computing Associates, Inc. ..... Cover 1
Workgroup Strategic Services, Inc. 3,6
World Wireless Communications, Inc. ..... Cover 1
Xilinx, Inc. ..... Cover 1
Zona Research, Inc. 13,30

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Microsoft hones Java strategy

▸ *Virtual machine, class libraries are on tap*

By Wylie Wong

IN HOPES OF stealing some of Sun Microsystems, Inc.'s thunder, Microsoft Corp. last week unveiled its strategy to help software developers create cross-platform Java applications.

Microsoft released a test version of its new virtual machine that runs ActiveX and JavaBeans components together.

The company also released a cross-platform library of graphics and user interface components, such as tool bars, that let developers quickly create Java applications.

The beta version of the virtual machine and the library — called Application Foundation Classes (AFC) Graphical User Interface Libraries — are available at Microsoft's World Wide Web aite at www.microsoft.com/java.

In the second half of the year, Microsoft also will release AFC enterprise libraries, which will provide Java application developers with distributed computing services, such as data access, directory services, management and transactions. Nearly 25 companies this week announced Java applications based on AFC.

Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif., said Microsoft's foray into Java goes against the conventional wisdom that the company would focus on getting developers to create applications with its own ActiveX tools.

"It shows they are extremely serious about the [Java] platform," Enderle said. "They want to be No. 1 in Java tools. And they are arguably better than anyone else at building tools."

Because many Java supporters are anti-Microsoft, it will be interesting to see if users support Microsoft's Java products, Enderle said. "Microsoft is dealing with the religious battle of, 'Do you feel good about using Microsoft tools on Java?' " he said. "In quality of tools itself, Microsoft's appear to be equal [to] if not better [than] comparable offerings from Sun and Netscape [Communications Corp.]."

User Steve Morris, a senior software architect at Pictra, Inc. in Sunnyvale, Calif., said the fact that Microsoft released the products has piqued his interest. But, be added, the products so far are limited.

Because many Java supporters are anti-Microsoft, "Microsoft is dealing with the religious battle of, 'Do you feel good about using Microsoft tools on Java?' "
– Rob Enderle, Giga Information Group

"It needs to have more application framework, like database support and collection classes — the things below the user interface," Morris said. Microsoft officials said those features will be released in later versions.

The virtual machine for Java Version 4.0 for Windows and the Macintosh will be released this summer, Microsoft spokesman James Plamondon said. The virtual machine, which translates Java code on a computer, will support Sun's Java Development Kit (JDK) 1.1 and be included in Microsoft's Internet Explorer 4.0, he said.

New virtual machine versions for Windows CE and Unia are being developed. The company also is creating a version that supports the older release of JDK, Plamondon said.

Aa part of its Java strategy, Microsoft will also offer a support program for commercial Java application and component developers. The J/Advantage Program will let developers talk with Microsoft's Java development teams online and join Microsoft in marketing efforts. □

Sun to tackle Java's shortcomings

CONTINUED FROM COVER 1

effort to change all that.

Sun is getting ready to extend client-centered Java to the server with technology that is expected by year's end. The company promises a new virtual machine that will make the translated language as fast, if not faster, than native code. And it is tightening the Pure Java criteria to ensure 100% compatibility on every platform.

Those improvements may persuade information systems managers to replace their powerhouse C++ code on business-critical servers with Java, which until now has been considered the new kid on the block.

"Speed and cross-platform problems have been holding people back from using Java on important applications," said Lee Stephens, a networked computing engineer at BT Networks & Systems, the largest telephone company in Great Britain. "It sounds like it will only be a few months for these issues to be taken care of. Then it will be ready for huge systems. We will start replacing our C++ code on the servers. We're ready to go all out with Java."

"The speed increase is going to be a huge deal for us," said Amit Bhatiani, a consultant at J. P. Morgan & Co., a New York-based global financial services firm. "That improvement can't happen fast enough for us. That will definitely lead us to using Java more on the enterprise. We couldn't without the speed."

Bhatiani said J. P. Morgan uses Java for about 5% of its applications, but be added that be expects that percentage to rocket to about 70% in three to five years.

To tackle the nagging speed problem, Sun is expected to deliver the Hot Spot Java Virtual Machine by year's end. Virtual machines translate the Java code to the computer. The virtual machine is being designed to optimize that Java code — removing unneeded text strings, for example — on the fly so that it will race through to the computer.

Alan Baratz, president of JavaSoft, the Java-focused division of Sun, said the Hot Spot Java Virtual Machine will run code two to three times faster than just-in-time compilers.

The Hot Spot Java Virtual Machine, which is expected to go into beta testing this summer, is slated to ship in the next version of the Java Development Kit.

ON THE HORIZON

Sun has unveiled plans to advance Java:

- **Java for the Enterprise**
  Expected by year's end
- **Hot Spot Java Virtual Machine**
  Beta due this summer; shipment expected by year's end
- **Java Foundation Classes**
  Available for download next month
- **Next version of JDK**
  Due this summer
- **Following JDK version**
  By year's end

Brewing up a storm

The following is a sample of the Java aroma that surrounded Sun Francisco last week at the JavaOne conference:

■IBM said it is building the JavaBeans component architecture in to its family of VisualAge development tools. That means applications, whether they are built with VisualAge for C++, VisualAge for Smalltalk or VisualAge for Java, can have reusable, cross-platform Java applets in them. VisualAge for Java, which is due to ship in June, will be the first to incorporate the architecture.

■Sun will extend Java's security functions. Java applications now sit in the sandbox, a technology that keeps the code from touching a machine's operating system. The technology limits the Java application's functionality but protects the entire system from any hostile applets.

■Key Labs said it will handle the 100% Pure Java certification. Three applications have gone through already: IBM's Host on Demand, Corel Corp.'s Office Personal Product Suite and Oracle Corp.'s Web Forms database development tool.

■WebTV, s product that lets people cruise the Internet via their televisions, has licensed Java and is building its interfaces and menus in Java.

■IBM announced its JavaBeans Migration Assistant, which was designed to turn an ActiveX control into a JavaBeans component. That will enable the controls to be used across multiple platforms. IBM is packaging the tool in its VisualAge WebRunner.

■Sun announced three application programming interfaces. Java Sound will provide access to a sound engine for control of synthesis, mixing and audio rendering. Java Advanced Imaging lets developers manage high-resolution images in applications. And Java Input Method lets developers deliver complex applications to the Asian market by supplying engines for Asian languages. — Sharon Gaudin

EVERYONE'S A CRITIC

Java has taken it on the chin in the past few months; various executives from Microsoft Corp. have vigorously pointed out several problems with Java's cross-platform capabilities. Some fonts differ among platforms, and some graphics will change size and appearance. Critics say that demonstrates that cross-platform capability is Sun's pipe dream.

But Sun calls cross-platform capability Microsoft's nightmare. Company officials said Sun is taking care of cross-platform problems by expanding the number of compatibility tests and by releasing a set of Java Foundation Classes that will fix presentation problems.

Kent Williams, a systems consultant at The Money Store in Sacramento, Calif., said those improvements will lure him to Java's camp, but the upgrades can't come fast enough. "The things announced at the conference are needed, but they're not here today. It's still not quite there yet for the enterprise. It will be, and then we'll use it," he said. □

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0585693. Computerworld (ISSN 0010-4841) is published weekly, except a single combined issue for the last two weeks in December by Computerworld Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Oh, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest, St. Paul, Minn. 55112, (800) 217-3874. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy; U.S. — $48 a year, Canada — $110 a year, Central & So. America — $150 (surface) a year, Europe — $295 a year, all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

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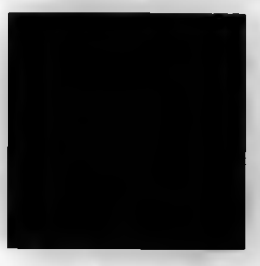
Letters, we get letters...

David Coursey

It's been quite a week. I usually write this column about nine days before you receive it (but I'm not supposed to tell you that). So this is Thursday, and I've spent most of the day explaining to the likes of *USA Today* and The Associated Press that there's nothing particular about being a Web-page designer that would make you and 38 of your friends want to kill yourselves.

Truly, a computers columnist is called upon to explain many things. Some things, like suicide cults, are beyond explanation. Others are much easier to handle. Take me, for example. I find myself easy to explain, even if I can be hard for others to understand. Especially in some of my recent columns about Internet issues.

Many readers have taken me to task over my position that Internet anonymity is a bad thing — that all user accounts should lead back to real users in the hopes of improving online behavior, especially in chat systems and the like. Many readers said it would be easy to spoof such a system; others said anonymity is an important part of life and ought to be part of the Internet as well.



So to the readers who think the Internet ought to be more like the real world, let me point out that anonymous people can't drive, vote, write a check, open the checking account in the first place, get telephone or electricity service, apply for public assistance, get insurance coverage or (in many instances) use credit cards. You get the idea; unless you want to live like a hermit in a small cabin/arsenal in the woods, anonymity doesn't really fit in very well. So grow up and accept responsibility for what you do on the Internet. (Yes, I know there are exceptions and limitations, so check out the original column for more details: www.computerworld.com/search/AT-html/9702/970210SL0210dc.html.)

Other readers took great exception to my proposal to enact an Internet access tax of some sort. Most objectors didn't seem to understand that such taxes have a great place in the history of American telecommunications, and that somebody has to pay for the cost of policing the Internet and providing access to those who otherwise wouldn't be able to gain access.

And I'm not just talking about poor people, but also communities that don't want to be left to rot when the "railroad of the 21st century" bypasses their town. Again, check out the original column for more details (www.computerworld.com/search/AT-html/9702/970217SL0217dc.html).

So I remain firmly convinced of the rightness, even righteousness, of my opinions. I stand even firmer in the belief that everyone is entitled to my opinion. But there is a chink in my armor: I realize I'm acting like a hopeless liberal/romantic and that people will find ways around taxes and their anonymity requirements.

This is the "when guns are criminal, only criminals will have guns" argument. And I am certain that the really bad guys can bypass any law they want — but not 100% of the time, and not forever. Further, honest people won't go through the bother of skating around the law.

The world will never be perfect, but I remain convinced that reducing anonymity and making the Internet pay for itself will make the world a better place.

But, of course, I could be wrong.□

Coursey, an analyst and consultant, is editor of "Coursey.com," an online newsletter available at www.coursey.com. His E-mail address is david@coursey.com.

A columnist bids adieu

Charles Babcock

I'm about to give up my role as watchman on the parapets and venture into the trenches of electronic publishing.

In this final column, I urge you, the stalwarts of the IS staff, to keep your powder dry. Listen to (but don't necessarily yield to) end users. Listen to (but don't always yield to) top business management. No one knows the characteristics of the computing infrastructure as well as IS. No one else can decide as effectively how to build for the future, utilizing the resources at hand.

Only the skilled IS professional can navigate the shoals between end users and top management. IS management must not lose its voice in the fundamental organizational decisions being made today.

At the same time, IS has to assume a larger role as systems integrator.

There's no longer such a thing as a safe buying decision. Yesterday's star is today's legacy system. Technology advances on multiple fronts. The proliferation of high-speed PCs created a literate audience looking for a way to link up with other users. From inauspicious beginnings, a set of 20-year-old technologies (Unix, TCP/IP and the PC modem) formed a wonderful confluence known as the Internet.



No single technology is most important. All developments form a kaleidoscope, with different elements slipping in and out of focus. We expect the relentless advancement of Moore's Law. We're also finding Robert Metcalfe's law to be true — that the value of the network goes up geometrically as it extends its reach.

Corollaries will emerge. It will get more difficult to sell things without first having earned standing on the network. Future software giants will start out modestly; they will invent something of value and give it away over the Internet.

In the long shadows of the Gates era, many still believe that individuals dominate technology. Didn't Thomas J. Watson Jr. mold the first modern technology company? Didn't Ken Olsen aptly package the minicomputer? Steve Jobs demonstrated with the Macintosh that technology was still our modern form of magic. And the late genius Seymour Cray single-handedly dominated high-performance computing for a generation.

Alas, it isn't that way anymore. Everything is done by teams, through partners or through licensing agreements. No one party can dominate more than a small slice of the total picture, although Microsoft still insists it can mount the effort. I don't believe its reign will last half as long as IBM's did.

Behind the figures that make the headlines are teams whose effectiveness determines the competitiveness of their organizations.

Digital, which is something less than a modern icon, spawned a remarkable number of teams. Gordon Bell led the development of the VAX and watched over David Cutler as he led the development of VMS and later (at Microsoft) Windows NT. One of Cutler's favorite programmers, Roger Heinen, left Digital and migrated to the West Coast and Unix, then Apple, then Microsoft, leaving tracks that reflected the movement of the industry. Digital's downfall may have stemmed from Olsen's inability to hang on to the effective teams that originated there.

But that's yesterday's news. Today's technical whizzes are headed for Java and Internet companies.

Tomorrow's developments will prove the wisdom of developing on a purely object-oriented basis, with discrete modules of software that can message each other across the network. Java, ActiveX and object request brokers are the first tentative steps in that direction.

Somewhere in a garage, or possibly in a distant shanty or tin-roofed hut, there is a young and driven inventor, newly familiar with the building blocks and working on tomorrow's advance.□

Babcock is leaving Computerworld *to become technical editor at Mainspring Communications, Inc., an online resource for Web site developers. He can be reached at cbabcock@mainspring.com.*

The Back Page

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Dispatches & images from the fringes of the electronic frontier

Digital archives



20 YEARS AGO
(APRIL 1977)

- The first West Coast Computer Faire is held in San Francisco. Commodore Business Machines unveils its Pet microcomputer, with 4K bytes of RAM and a tape drive, for $600.
- Also at the Faire, Apple introduces the Apple II, with 4K bytes of RAM and a plastic case, for $1,300. It is the first microcomputer to feature color graphics.

10 YEARS AGO
(APRIL 1987)

- IBM overhauls its PC line. The new PS/2 line has a 386 chip, radical 3.5-in. floppy drives and the Micro Channel Architecture.
- IBM and Microsoft announce OS/2.
- Microsoft announces Windows 2.0.
- Headline: "Lotus sued for Visicalc infringement"

Risk assessment

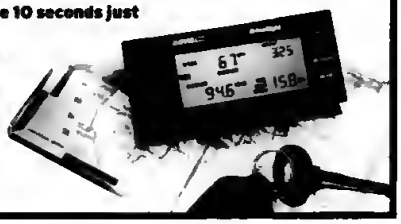
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- QuakeInfo: fault lines and historic records of earthquakes.
- HailInfo, WindInfo, HurricaneInfo and TornadoInfo: records of natural disasters and storms.

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Turn transparencies into polyester pants

The planet is awash in overhead transparencies generated by color printers for presentations. If laid end-to-end, the transparencies discarded annually would circle the globe six times. About 15 million pounds of the stuff ends up in landfills each year. So 3M Visual Systems in Austin, Texas, and Gemark Service in Exeter, Pa., have developed a recycling program that turns the film into polyester. Call (800) 952-4059 to participate.



The "Count-Down" watch ($79.95, Branco International in Kings Park, N.Y.) ticks down to Jan. 1, 2000, which makes it a nerve-wracking gift for anyone involved in millennium software projects.

Inside Lines

Ghastly working conditions

Networking consultants gagged recently when they were called in to test the performance of systems and internetworking gear at a university in the Washington area. While troubleshooting gear in the campus computer center, they noticed some dripping from the ceiling. They blanched when they learned the medical school morgue was situated overhead.

Tandem lifts shadow over Eclipse

Tandem this week will announce new performance clustering capabilities for Unix-based systems. Code-named Eclipse, the new technology is based on Tandem's ServerNet interconnect architecture, according to a source close to Tandem. The company also is expected to make 5 Windows NT-related clustering announcement the week of April 28.

Cabletron licenses IP switching

IP switching will receive a shakin shot in the arm this week when Cabletron Systems announces it will license the technology from Ipsilon Networks. IP switching, launched by Ipsilon in March of last year, was designed to turbocharge router-based IP networks. Cabletron is the largest switching player to date to license the technology. A Cabletron spokesman confirmed plans for the announcement but wouldn't provide details.

Here comes the Sun king

James Gosling, vice president at Sun Microsystems and inventor of the Java language, is achieving something of a cult-like status. Gosling delivered part of the keynote address the first day of last week's JavaOne conference in San Francisco. When he walked onstage, the crowd of programmers and vendors cheered so Sun minions threw limited-edition James Gosling T-shirts — signed and all — into the crowd.

Microsoft praised as a good Java do-bee

Wondering how crew teams? You may be able to ask some executives at Sun. After months of verbally lashing out at Microsoft for trying to splinter plans for a standardized Java, Sun executives were pressed during a press conference at JavaOne last week to say exactly how Microsoft is veering away from the standard. The answer: They aren't. Well, not yet, they added. "At this point and time, we are not seeing fragmentation," said Alan Baratz, president of JavaSoft. "All licensees, including Microsoft, are doing what they need to do."

Company subsidizes at-home surfing

How do you discourage [illegible] recreational Web surfing? Boehringer Ingelheim Animal Health division in St. Joseph, Mo., does it in part by subsidizing employees' dial-up Internet connections at home. Workers [illegible] connected to the Infobahn at the office can receive three months of payment for a personal Internet dial-up account, according to [illegible] Flaskette, HI manager. That would let them explore the Web to their heart's content while not on the company clock. But there days, he says, a lot of the employees already have their own accounts and don't need the subsidized connection.

If you experienced an energy dip at home or work in January, it may be due to the 650 companies that switched on their R/3 software systems from German vendor SAP AG. Among those flipping the switch were Delmarva Power & Light, Digital, Pennzoil and PSC Scanning. SAP claims this is the most businesses to go live on its flagship product in SAP's 25-year history. Not all those companies were new installations. SAP said 450 were new, and 200 were migrations from Version 2.2 to Version 3.0. If you are in the midst of an R/3 implementation or have any other news to share, contact News Editor Patricia Keefe at 508-820-8183 or patricia_keefe@cw.com.

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